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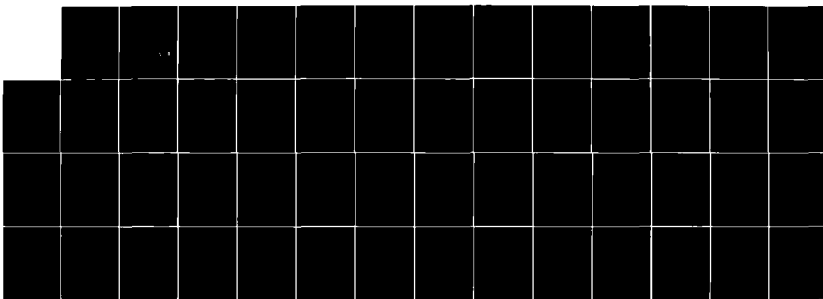
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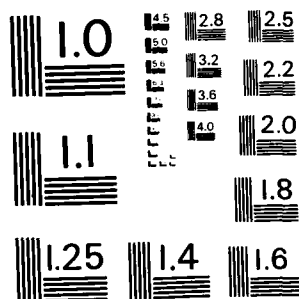
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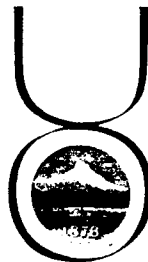
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ORGANIZATIONAL EFFECTIVENESS AND PERFORMANCE

James R. Terborg  
University of Oregon

FINAL REPORT

July 29, 1983

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Technical Report 83 - F

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20 ABSTRACT (Continue on reverse side if necessary and identify by block number) A model for studying organizational effectiveness is proposed. Using the model, economic, behavioral, and attitudinal indicators of retail store performance were collected for a three year period. Predictors included: community buying power, local unemployment rate, organizational climate, and aggregate measures of the quality of store personnel such as training, education, and tenure. Predictors and criteria were multidimensional and stable over time. The results, however, were rather weak with $R^2$ for predictor sets often being less than .10. It was concluded that effectiveness is multidimensional and multidetermined. And, that the relative strengths of relationships can vary depending on key situational factors such as industry and technology.		

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## AN EMPIRICAL INVESTIGATION OF ORGANIZATIONAL EFFECTIVENESS AND PERFORMANCE

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### INTRODUCTION

Organizations have a pervasive impact on modern society: people work for organizations; people use products and services offered by organizations; people are governed by decisions made in organizations. It is difficult to imagine a meaningful part of our lives that is totally unaffected by organizations. Consequently, because organizations have such a great impact on the standard of living enjoyed by members of society, it is critical to design and operate organizations in a manner that satisfactorily meets the needs of that society.

The creation of effective organizations implies, however, an understanding of how organizations function, and how effectiveness is determined. Although this will be a complex and problematic task with little likelihood of reaching a final or even acceptable solution, social science research, never-the-less, should contribute to knowledge about organizational design and operation.

This paper represents the Final Report of a multi-year project on organizational effectiveness. The project's objective was to empirically examine relationships among variables thought to reflect indicators of organizational effectiveness and determiners of organizational effectiveness. Archival data from 142 retail stores belonging to the same international merchandise organization provided the basis for the investigation. Research was guided by a multivariate model that considered the unique and joint contributions of: (a) environmental factors, (b) employee perceptions of unit policies and practices, and (c) quality of personnel on attitudinal, behavioral, and economic indicators of effectiveness. Although generalizability of results is limited by use of multiple units from a single organization in a single industry, the findings should have implications for the design and operation of any large organization composed of geographically dispersed but similar units. In such organizations, all units face generally equivalent issues of personnel selection, training, retention, utilization, and performance. Similarly, all units can be judged on criteria used by the organization for internal assessment of unit performance. Understanding how different variables impact unit performance would be relevant for a variety of decisions including resource allocation, expansion/retrrenchment, and promotion/transfer of personnel.

The report is organized into four major sections: literature review, method, results, and discussion. The first section will briefly summarize key issues in the organizational effectiveness literature. A model to guide research will be proposed, and major research questions will be identified. The second section will describe the sample and operationalization of variables. The third section will present the results of the study, beginning with inter-relationships among variables within the same set and concluding with multivariate relationships among sets of variables. The final section will summarize the findings, discuss results thought to be of particular interest or importance, and conclude with a general evaluation of the study.

### REVIEW OF THE LITERATURE ON ORGANIZATIONAL EFFECTIVENESS

#### Current Status of the Concept

The literature on organizational effectiveness is voluminous, disorganized, and theoretically complicated. Several books, conferences, and symposia have been devoted to the topic during the past 10 years (c.f., Goodman & Pennings, 1977; Price, 1968; Steers, 1977; Zammuto, 1982), and, many leading researchers and theorists have written papers or given talks on the subject. Although our understanding about organizational effectiveness is still in a preliminary state, several key issues and observations have surfaced.

First, it has become more evident that the concept of organizational effectiveness is of limited theoretical relevance. As Kahn noted (1977), the term has not met scientific definitional criteria with regard to conceptualization or operationalization. Multiple definitions exist. As a consequence, there is

disagreement concerning what variables constitute antecedents of effectiveness and what variables constitute indicators of effectiveness (Goodman & Pennings, 1980). Is adaptability an antecedent of effectiveness or is adaptability an indicator of effectiveness? Furthermore, how do you operationalize adaptability? Is it a function of the match between organizational structure and the environment, or, is it a climate of trust and participation?

Fortunately, there are solutions to this problem. One is to drop the term "Organizational Effectiveness" from the scientific language as a concept that is definable and measurable, and to redefine it as a research domain that includes a variety of topics and methodologies yet shares a common theoretical tradition. A second solution is to recognize the difference between matters of value and matters of fact (Campbell, 1977). Matters of fact specify observable relationships among variables such as demonstrating a link between organizational structure and efficiency of production. Matters of value specify value judgements about the relative "goodness" of products and services offered by the organization. Matters of value are subjective evaluations. Different groups or constituencies are likely to make different evaluations of the same output. This notion that "effectiveness is in the eye of the beholder" is at the crux of the problem with definition and operationalization of the construct. Thus, research in the domain of organizational effectiveness must distinguish between matters of value and matters of fact. Dubin (1976) notes the two major perspectives of managerial and societal. Managers might evaluate efficiency, profitability, or market share as desirable while groups in society might oppose the very existence of the organization. Scientific methodology can be successfully applied to establishment of matters of fact. It also can be successfully applied to establishment of different matters of value. But, it cannot be successfully applied to establishment of whose values are "correct" and whose values are "wrong."

Having redefined organizational effectiveness as a research domain that includes matters of fact and matters of value, it becomes easier to focus in on remaining key issues. Perhaps the most important issue is use of a model to guide research. A model makes explicit what variables are thought to be important and what variables are thought to be unimportant; a model specifies relationships among variables; and a model specifies the level of analysis for collection of data. Different or even competing models might be proposed. This is not a problem, but a sign of a developing field of inquiry. Models that are disconfirmed are either dropped from use or are modified. Once a model has been chosen to guide research, traditional concerns of methodology and measurement begin to surface. Typical questions include validity of measurement, stability over time, and dimensionality of constructs (Steers, 1977).

In summary, organizational effectiveness refers to a research domain and not to a scientific concept. Research within this domain can employ a variety of models and methodologies appropriate to the question of interest at the time the data are collected. Appropriate questions for investigation include the identification and measurement of different value systems used by constituencies in judging organizational effectiveness, and the establishment of reliable associations between variables specified by explicit models of organizational assessment.

#### A Model of Organizational Effectiveness

Perhaps the most critical decision in research on organizational effectiveness is deciding what variables to measure. The domain is so broad that no single study could ever include all of the variables that might be identified as important. The researcher needs a roadmap, a theory, or some conceptual framework to aid in the choice of variables. This section will discuss the model used to guide the present research study.

At a minimum, models must include a list of variables, concepts, or constructs that can be operationalized and models must specify relations among those variables, concepts, or constructs. In addition, if models are to be particularly useful, they should be: (a) explicit, (b) theory based, (c) operationally defined, (d) empirically validated, (e) generalizable, and (f) have face validity (Nadler, 1980).

Much current work in the domain of organizational effectiveness can be placed into one of three major models. The three models are the Goal Attainment Model, the Systems Model, and the Resource Dependence Model.

The goal attainment model is perhaps the most discussed model. An organization is judged effective when it is able to achieve its goals. Research using the goal attainment model would attempt to identify goals, objectives, and standards, and to determine whether these goals were satisfied. This straightforward and simple approach, however, can quickly become complex. There are problems with multiple goals, incompatible goals, and prioritization of goals. In addition, even if these problems are dealt with, the goal attainment

model does not fully specify antecedents of goal success. Obviously, it is of interest to know why some organizations achieve their goals while other organizations do not.

The systems model was for a long time the major alternative model to the goal attainment model. The systems model suggests that organizations are effective when decisions are made at or near the source of implementation, when communication is accurate and readily available, when there is a minimum amount of conflict, and when there exists shared values of trust and confidence. Much of the activity dealing with Organizational Development is based on the systems model. The systems model, however, often excludes economic and behavioral criteria thought to index organizational performance. In the past, relatively little research has attempted to link OD interventions to hard criteria; the work of Likert (1967) and his associates at the University of Michigan being an exception.

The goal attainment model and the systems model complement each other. The goal attainment model focuses on outcomes while the systems model focuses on process. The merging of the two models provides a more complete view of organizational behavior and there is a growing body of data attempting to relate OD process interventions to economic and behavioral criteria (c.f., Nicholas, 1982, for a recent review).

The goal attainment model and the systems model emphasize the internal control of organizations. These models do not explicitly deal with the question of context. This omission has been noted by several writers (e.g., Aldrich, 1979; Hannan & Freeman, 1977; Pfeffer & Salancik, 1978). The result is the resource dependence model, third dominant model of organizational effectiveness.

The resource dependence model can take several forms. Essentially, the model states that organizational actions can better be understood through delineation of critical dependencies between the organization and its environment. Rather than organizational outcomes being dependent on internal actions taken by management, these outcomes are constrained and even over-determined by events in the environment. Government regulations, interest rates, the weather, availability of supplies and raw materials, changing social values, and other external organizational events are thought to have much greater impact on organizational outcomes than do actions taken by management concerning the nature of organizational goals or organizational systems. At best, management can try to anticipate, adapt to, and possibly control critical resources and critical constituencies in their environments such that continued survival and growth is enhanced.

The resource dependence model of organizational effectiveness has made a genuine contribution to organizational theory. It presents a strong counterpoint to positions taken by theorists in organizational behavior, who emphasize individual and group action. But, does discovery of the environment as an important force in organizational outcomes necessarily imply that internal organizational actions no longer need to be given much attention? Should researchers and consultants abandon concern with process and goal attainment? The answer is, No! What it does imply, however, is the importance of a previously under-researched set of variables which should be incorporated into existing model building.

Several integrative models that explicitly consider internal and external determinants of organizational outcomes recently have been developed (c.f., Kotter, 1980; Nadler & Tushman, 1977; Steers, 1977). Although there is little empirical data currently available to use in confirmation or disconfirmation of these models, taken together, they provide a useful basis from which to design organizational effectiveness research.

The model developed as part of this research project is shown in Exhibit 1. The model begins with the assumption that organizational outcomes are a function of characteristics of the organization and characteristics of the environment. Second, the model assumes that indicators of effectiveness are a function of organizational outcomes. The particular outcomes chosen as indicators of effectiveness will depend on who is doing the evaluation and the purpose of the evaluation.

The environment has three major dimensions or subsets that need to be considered. These are: (a) the decision-making context, (b) resources, and (c) external organizational constituencies.

Within the decision-making context, key factors influencing how the environment is understood by management are predictability, stability, and complexity. Stable, simple, and predictable environments make different demands on organizational decision makers than do variable, complex, and unpredictable environments. Resources also can be viewed as having three key factors. These are resource availability, resource controllability, and resource dispersion. A favorable environment might be one where critical resources are readily available, dispersed evenly throughout the domain, and controllable. Finally, there are external organizational constituencies. Key factors are the values held by critical constituencies and the power available to critical constituencies. A favorable environment would be populated with powerful constituencies that value the outcomes of the organization and weak constituencies that attach negative valence to outcomes of the organization.



The organization has six major divisions or subsets. These are: (a) strategy, (b) technology, (c) formal organizational arrangements, (d) informal organizational arrangements, (e) personnel, and (f) history.

Strategy can be divided into corporate strategy, business strategy, and operational strategy. Corporate strategy defines the core mission of the organization. It deals with the question, "What business are we in?" Business strategy translates the core mission into long-term goals and objectives, standards for achievement, and general plans for action and resource allocation. Operational strategy translates business strategy into short-term goals and specific plans for action. Technology refers to the major techniques used by the organization while producing a product or providing a service. Technology includes methods of operation, equipment, and knowledge. Formal organizational arrangements are those structures and methods intentionally created and supported by the organization in order to facilitate organizational goals. These arrangements include decisions about organizational structure, control and measurement systems, and personnel policies and practices. Informal organizational arrangements are those processes and behavioral patterns that emerge as part of ongoing functioning. These include the formation of organizational values, norms, and beliefs; leadership styles; and interaction patterns. Terms like "Organizational Culture" and "Organizational Climate" would be included under informal organizational arrangements. Personnel characteristics important for organizational functioning include level of organizational attachment; knowledge, skills, and abilities; and demography. Finally, history is the "memory" of the organization, which includes patterns of past behavior, and interpretation of significant events.

The model is a list of variables thought to be important for understanding organizational outcomes. Depending on the situation, it might be necessary to include additional variables. The list was not designed to be all inclusive. Rather, the intent was to be comprehensive without becoming overly complex.

Effective use of the model requires the researcher to consider four questions. First, the nature of the organization, or organizations, under investigation should be specified in sufficient detail so that appropriate variables can be considered for inclusion in the study. Second, the purpose of the investigation should be clarified for the same reason. Third, with this knowledge, the researcher should select organizational outcomes that are relevant for the organization and the purpose of the investigation. Finally, the researcher must identify variables from the model that are likely to have an impact on the outcomes chosen for investigation. These variables should be assessed or controlled. For example, if the researcher is interested in organizational growth, then strategy might be a more important variable set than would personnel. Thus, attempts should be made to obtain valid assessments of strategy. But, if the outcome is labor relations, then personnel might be a more important variable set than would strategy. In practice, more variables might be identified than can realistically be included in the study. Also, valid operationalizations of some variables or variable sets might be difficult or impossible to do. Data might not exist, data might not be coded in a useable format, and certain types of information might be confidential. Finally, if data collection and retrieval become problematic, the researcher must decide, at some point, whether sufficient internal validity can be preserved to make the results interpretable.

#### Use of the Model to Guide Research Decisions

The focus organization is a Fortune 500 firm engaged in international merchandising. The organization is a leader in its industry and has exhibited steady, if not spectacular, growth during the past 20 years. The organization has a nationwide distribution network of retail sales stores. Based on articles in magazines such as Business Week, Forbes, and Fortune, the organization has a strong customer image, emphasizes customer satisfaction, and competes on the basis of quality merchandise at a reasonable price. The particular unit of analysis will be the performance of 142 retail stores. All stores are classified as "A" stores by the organization. These are the largest stores, with "B" and "C" stores being smaller and carrying reduced lines of merchandise.

The purpose of the study was basic research on organizational performance. The organization was contacted because of the availability of data and the responsiveness of key organizational members to requests for research activity.

Choice of organizational outcomes to be used as indicators of effectiveness was based on two factors. First, outcomes should index those criteria used by the organization in monitoring store performance. Thus, the organization's own values were used to define effectiveness. And second, outcomes should be accessible and valid.

Six outcomes were selected for investigation. All outcomes were recorded at the store level. The

outcomes were: (a) sales per hour, (b) annual sales volume divided by annual total labor costs, (c) annual voluntary turnover rates among management personnel, (d) annual voluntary turnover rates among sales and sales support personnel, (e) aggregate job satisfaction for management personnel, and (f) aggregate job satisfaction for sales and sales support personnel. These variables will be described more fully in the methods section of the report.

Having identified the organization as a leader in the retail sales industry, and the unit of analysis as store performance, the next step in use of the model is to identify relevant variables for inclusion in the study. Beginning with the environment, only variables associated with resources were thought to be of interest in explaining differences in store performance. The decision-making context would be more relevant in the formation of overall corporate policy and strategy and would not likely be a critical factor in the operation of any particular store. Although, the decision-making context would be important if the unit of analysis were different retail organizations. External organizational constituencies, e.g., consumer groups, manufacturers, and local, state, and federal governments, also were not thought to be critical for understanding performance at the store level. Again, these factors would probably be more relevant if organizations and industries were studied as opposed to stores within the same organization. Unions, however, would be one important constituency in the environment that could have impact on local store performance. In the present study, none of the stores included for analysis were restricted by collective bargaining agreements at the store level.

Resources in the environment can be classified on the basis of availability, controllability, and dispersion. In the retail industry, marketing strategists use a process called "site analysis" to guide the placement of stores in good locations. One of the most important factors used in site analysis is the amount and stability of potential customer income (Duncan & Hollander, 1977). Although retail organizations can not control community income, it can place stores in locations where wealth, or sufficient income given the pricing philosophy of the organization, is concentrated. This increases the likelihood of high and stable sales volume and profitability. Three variables were assessed in the present study to index differences in resource environments faced by the different stores. The variables are: (a) median family discretionary income in the community, (b) average local unemployment rate for the year, and (c) shopping mall versus downtown/neighborhood location.

Discussion now turns to consideration of organizational components relevant for understanding differences in retail store performance. Based on information about the organization obtained from discussions with key personnel and articles in magazines such as *Business Week*, *Forbes*, and *Fortune*, strategy and formal organizational arrangements were not thought to be relevant for explaining performance differences at the store level. Strategic decisions are made at corporate headquarters and are the same for all the stores. Also, stores had the same basic structure, control and measurement systems, and personnel policies and practices. In fact, interviews with store managers showed some discontent over the control exerted by corporate on buying, pricing, inventory, and marketing decisions. All stores were required to carry a basic line of merchandise and major sales campaigns were conducted on a regional or national basis. It might be interesting to note that W.T. Grant, a large general merchandise organization which collapsed into bankruptcy during the middle 1970's, gave store managers considerable control over such decisions.

In retailing, it has long been known that the design and appearance of a store affects consumer behavior (Mason & Mayer, 1978). Lighting, layout, store equipment, counter and display cases, parking, and age of the building all can impact sales volume and profitability. These factors would be included under technology. In the present study, it was not possible to obtain direct measures of these variables. But, it was felt that knowledge of shopping mall versus downtown/neighborhood location would be a surrogate measure of these characteristics. In general, shopping mall stores are more modern, larger, and have free parking. The relationship between history of a retail store and store performance has not been the subject of systematic research. Given this lack of knowledge coupled with the probable high cost of data collection, no attempt was made to measure aspects of store history.

The remaining organizational components are informal organizational structure, and personnel. Emphasis was placed on assessment of variables in these two categories.

Retailing is fundamentally a "people business." Contributions made by employees working directly in sales with customers, and those working behind the scenes in administrative and sales-support departments greatly affect the growth and profit of the store. This becomes particularly evident when you realize that total labor costs, e.g., salaries, bonuses, fringe benefits, and social security taxes, often constitute 70 percent of the total expense of selling. (Mason & Mayer, 1978). Yet, inspite of these high figures, retail

sales is a low paying career field, has a poor image among job applicants, and does not attract highly qualified people (Duncan & Hollander, 1977). The implications of this are seen in the results of a 1975 survey of personnel administrators in the retail industry. The three biggest problems were the need for training, an unmotivated and discourteous sales staff, and the inability to attract and retain quality employees (Mason & Mayer, 1978). Because competing stores often duplicate products, brands, promotions, and prices, the quality and efficiency of the sales force often becomes a major differentiating feature of the store.

Informal organizational arrangements were assessed with employee responses to scales measuring the degree of support and participation within the store. Descriptions of leadership practices and organizational practices were recorded separately for management and sales staffs. The scales are similar to those used by Likert (1967) to measure managerial leadership and general organizational climate. Previous research has shown these scales to be reliable and to predict store profitability, turnover rate, and level of unionization activity (Terborg & Konocar, 1981; Terborg & Shingledecker, 1982).

Several measures were available for identification of personnel characteristics thought to be relevant for store performance. Information on management staffs included: (a) tenure, (b) education, (c) ability test scores, and (d) performance ratings. Information on sales staffs included: (a) tenure, (b) education, (c) ability test scores, and (d) percentage of employees having completed the first level of training. All data were store averages. No individual level data were obtained. These measures reflect the overall quality of personnel within the stores.

In summary, the proposed model of organizational effectiveness was used to guide preliminary research decisions. Six outcomes thought to reflect corporate values were selected as effectiveness indicators. These outcomes were: (a) sales per hour, (b) annual sales volume divided by total cost of labor, (c) annual voluntary turnover rate for managers, (d) annual voluntary turnover rate for sales and sales support staff, (e) overall job satisfaction for managers, and (f) overall job satisfaction for sales and sales support staff. Three aspects of the environment were identified as important factors in differentiating store performance. These were: (a) median family discretionary income, (b) average annual local unemployment rate, and (c) shopping mall versus downtown/neighborhood location. Finally, several features of the organization were identified as possibly impacting store performance. These were: (a) employee descriptions of leadership practices and organizational practices within each store, (b) quality of the management staff within each store, and (c) quality of the sales and sales-support staff within each store.

#### Major Research Questions

Once decisions have been made regarding selection of variables for inclusion in the study, questions arise concerning validity of measurement, stability of constructs over time, and dimensionality of constructs (Steers, 1977). In the present study, emphasis was placed on collecting longitudinal data over a three year period. Data are for 1976, 1977, and 1978 with two exceptions: ratings of job satisfaction and descriptions of informal organizational arrangements were collected only for 1977.

The first research question considers criterion dimensionality and criterion stability. This will be examined by computing the intercorrelation matrix among all effectiveness indicators and by conducting a principal components analysis.

The second research question considers predictor dimensionality and stability. This will be examined in the same way as was described for effectiveness indicators.

The third research question looks at the validity of employee descriptions of leadership practices and organizational practices. Ratings of this type are often called measures of organizational climate. Following suggestions by James (1982), Joyce and Slocum (1979), and Schneider and Reichers (1983), the validity of the climate measures used in the present study will be investigated. Of particular interest are: (a) evidence of different descriptions between management and non-management staffs, (b) evidence of differences in climate scores across the 142 stores, and (c) evidence of agreement or consensus on descriptions within stores.

The fourth research question also involves the climate measures. Likert's research (1967) suggests that climate is a lead variable for changes in performance. Research on survey feedback guided interventions show performance improvements follow change in climate from autocratic to participative by up to two years. But, research on leadership suggests that performance also can affect ratings of supervisory behavior. Because economic and behavioral outcome measures were collected for three consecutive years, it will be possible to

examine whether climate is an antecedent of performance or a consequence of performance.

The fifth research question concerns relationships among environmental variables, climate variables, and personnel variables and the six effectiveness indicators. Based on the general literature, the following predictions are made. Sales per hour and sales volume divided by labor cost will be positively correlated with: (a) community income, (b) shopping mall location, (c) participative and supportive climates, and (d) quality of personnel; and, these outcomes will be negatively correlated with local unemployment rate (c.f., Aldrich, 1979, Duncan & Hollander, 1977; Likert, 1967; Mason & Mayer, 1978; Pfeffer & Salancik, 1978). Voluntary turnover rates will be negatively correlated with: (a) local unemployment rate, (b) participative and supportive climates, and (c) tenure; and, turnover rates will be positively correlated with both education and ability (Mobley, 1982). Employee job satisfaction will be positively correlated with: (a) local unemployment rate, (b) participative and supportive climates, (c) tenure, and (d) training; and, it will be negatively correlated with community income (Likert, 1967; Smith, Kendall, & Hulin, 1969).

#### METHOD

##### Overview

Empirical research on indicators of organizational effectiveness is constrained by the difficulty of data collection. With the organization as the unit of analysis, or some major unit of the organization as in the present investigation, time and money limitations restrict the researcher's access to data. Consequently, there are two major methods for the collection of information; one involves intensive case studies of a single organization over time, and the other depends on use of archival data collected from a sample of organizations. The present study is of the latter type.

Archival data have great potential for research if a few significant problems can be overcome. Lawler, Nadler, and Cammann (1980) see several advantages to use of archival data. Archival data can be many times less expensive to collect than data obtained from new sources, there often is little response bias, the data are non-reactive, and the data have face validity to the people in the organization. Disadvantages are that data might not be coded in a form that is useable for research purposes, data might be of poor quality with many errors or inconsistencies in recording, and ethical problems of informed consent must be considered.

In the present study, care was taken to maximize the positive features of archival data while minimizing the negative features. Data were collected from multiple sources using multiple methods. Information obtained from the organization was accepted as valid by the organization. During the retrieval process, checks were taken to ensure that data would be of high quality and consistent across stores. Data on personnel were aggregated to the store level by the organization to preclude identification of any individual, thus avoiding problems with informed consent. Finally, the survey data were collected by the organization as part of regular personnel practices. This would minimize bias that might result from employee reactivity to a research questionnaire.

##### Sample

Information was available for 1976, 1977, and 1978 on 142 retail sales stores located throughout the United States. All stores are part of the same international merchandising organization, and they all exist in Standard Metropolitan Statistical Areas. All stores are classified as "A" stores by the organization. Although differences exist in store size, for example, sales volume had a mean of 14.6 million dollars with a standard deviation of 9.5 million dollars and total number of all types of employees on the payroll had a mean of 422 employees with a standard deviation of 232 employees, all stores carried the same basic line of merchandise and were classified as being of comparable type by the organization. None of the stores were unionized at the store level. All stores had been in operation for at least two years prior to 1976.

##### Assessment of Variables

Measures used as indicators of store effectiveness were obtained from the organization's corporate headquarters. Annual sales volume was not used as an indicator of effectiveness because it would be confounded with store size. In fact, volume often is used as an index of size. Therefore, sales per hour was chosen as an index of sales volume efficiency that controls for differences in overall store size. This

figure represents the average sales per hour for all full-time and regular part-time selling personnel while they are on the floor.

In addition to sales volume efficiency, a measure of profitability was obtained. The organization would not release actual profitability figures. But, it was possible to construct a measure of profitability from knowledge of annual sales volume and total labor costs. For each store, volume was divided by total annual labor cost (e.g., salaries, wages, bonuses, commissions, fringe benefits, payroll tax, sick leave, etc.) to produce a ratio of sales dollars generated for each payroll dollar spent. This measure is thought to be a valid index of profitability for several reasons. First, industry figures for general merchandise retail organizations suggest that payroll accounts for up to 70 percent of the total expense of selling (Mason & Mayer, 1978). Cost of inventory, another variable that would have substantial impact on profitability, could vary across stores, but recall that store managers had relatively little discretionary power over the bulk of their product line. This leaves such things as rent, utilities, insurance, and maintenance as remaining factors in computation of profitability. While these were not controlled, it was not judged a threat to internal validity.

Annual turnover rates were obtained from corporate personnel files. Based on exit interview information and other coded information, turnover was divided into voluntary and involuntary. Involuntary turnover consisted of retirements, dismissals, death and disabilities, temporary removal from the labor force such as pregnancy or going back to school, and other similar reasons. Voluntary turnover consisted primarily of employee termination decisions to seek work somewhere else.

Finally, satisfaction was measured with employee responses to a 42 item satisfaction questionnaire included in a larger employee attitude survey administered during 1977 to managerial, sales, and sales support personnel. Temporary part-time employees were not included. The satisfaction survey has been shown to be valid, internally consistent with reliabilities ranging from .68 to .92, and to compare favorably with the Job Descriptive Index, which is one of the leading measures of job satisfaction (c.f. Dunham, Smith, & Blackburn, 1977). Although the survey contains eight separate job facets, e.g., pay, physical working conditions, co-workers, only the total score was used as a measure of overall employee satisfaction. Item averages to the eight scales were computed and then summed.

The three measures of the environment were assessed from different sources. The organization indicated shopping mall versus downtown/neighborhood location in addition to the city and state. Given city and state information, annual unemployment rates for the city or county were retrieved from the U.S. Bureau of Labor Statistics and the U.S. Census City and County Data books for the years 1976 through 1978. Finally, median discretionary family income, hereafter called Buying Power Income (BPI), was retrieved for each city or county from statistics reported in Sales and Marketing Management magazine for 1976 through 1978. Buying power income is personal income less personal tax and other nontax payments. According to Sales and Marketing Management, who computes this figure, the figure is a measure of disposable personal income and indicates the general ability of consumer purchasing behavior. From examination of the magazine, the figure appears to be used in a variety of marketing decisions.

Date indicating personnel characteristics were made available by corporate headquarters. To preserve anonymity, all measures were store averages. For managers, information consisted of: (a) the average number of years of service with the organization (Tenure), (b) the average level of formal education (Education), (c) the average total verbal and quantitative test scores obtained in the most recent administration of this selection test (Ability), and (d) the average of the performance ratings assigned to manager personnel in the store for the previous year's performance (Performance). The performance rating is a subjective scale with nine dimensions. The store manager would evaluate the remaining management staff in the store and the group or zone manager would evaluate the store manager on the same scale. The performance figure used includes ratings of the store manager and the remaining management staff. Similar data were collected for full-time sales and sales-support personnel with two exceptions. First, the ability test was different so the scores are not comparable between management and sales/sales support. And second, rather than performance ratings, a measure of the percentage of employees having completed the basic in-store sales training program was recorded.

Finally, employee survey data were used to index the informal organizational arrangements characteristic of each store. The measure was constructed from items taken off of the same employee survey from which the satisfaction score was computed. The company places high value on employee survey data and periodically administers a large (200 plus item) survey to store personnel. Participation is anonymous and voluntary. Employees are given paid release time from work to complete the survey. Over 18,000 cases were available for

analysis in the present study.

Past research on organizational climate suggests that climate items be descriptive of organizational actions. Job satisfaction items, in contrast, would be evaluations of job experiences. Previous work identified 28 items in the survey that were descriptions of store leadership practices and store organizational practices. These items were found to be empirically related to items used by Likert (1967) to measure managerial leadership and organizational climate (Terborg & Konocar, 1981). The leadership practices scale was composed of eight items having either a four or five point response scale, although most of the items were of the latter format. Sample items are: (a) To what extent can you count on supervisors (managers) to get answers to problems you take to them?, and (b) How do supervisors (managers) react when someone makes a mistake? The organizational practices scale was composed of 20 items. Again, most items were on a five point response scale with the remaining items having a four point response scale. Sample items are: (a) Do you receive advance information regarding the things going on in your division or department?, and (b) Would you feel free to go 'all the way to the top' if you felt you were being treated unfairly? Cronbach's alpha was computed for a subsample of managers (N = 993) and sales personnel (N = 3,338) from 31 stores. Alphas ranged from .80 to .86, showing the scales to be of sufficient internal consistency.

Two types of scores were computed for each scale, separately for management and sales employee groups. The first score represents the level of participation and support in the store. For each respondent, the item mean score was computed and then aggregated over all respondents to produce a store average mean score. Thus, each store had a mean score for manager descriptions of leadership practices and organizational practices and a mean score for sales staff descriptions of leadership practices and organizational practices. In addition, a measure of inter-employee agreement was computed. A basic issue in organizational climate research involves the operationalization of shared meaning. That is, measures of individual descriptions, or psychological climate, should not be aggregated to the organization level unless there is evidence of agreement among respondents (c.f., James, 1982; and Schneider & Reichers, 1983, for discussions). The agreement measure used was an estimate of the average squared Euclidian distance between all pairs of employees to the eight leadership items and to the 20 organization items (c.f., Cronbach & Gleser, 1953 for discussion and formulas). Cronbach and Gleser (1953) suggest the Euclidian distance measure as an index of agreement because it is sensitive to profile level, shape, and dispersion. Pennings and van Mijk (1982) have demonstrated the utility of the measure. Thus, in addition to the mean level of support and participation there also were measures of the mean distances. Organizational climate data were based on responses from 3,695 managers and 12,103 sales personnel.

In summary, archival data from a variety of sources were retrieved for use in the study. Multiple methods were used to index attitudinal, behavioral, and economic variables of interest. The data are thought to be accurate and to allow comparison across stores.

## RESULTS

Data were analyzed using bivariate and multivariate correlational techniques including Pearson Product-Moment correlations, multiple regression analysis, principal components analysis, and canonical correlation analysis. The first objective was to examine relationships within the variable sets with a goal toward data reduction. The initial list of 53 variables was thought to be too large for analysis and interpretation. The second objective was to evaluate the validity of the leadership practices scale and the organizational practices scale as measures of informal organizational arrangements, or climate. Failure to satisfy certain criteria would mean that these variables would have to be excluded from analysis. The third objective was to consider climate as a lag or a lead variable in relationship to indicators of effectiveness. The fourth and final objective was to examine relationships among the predictors and criteria and to estimate relative strengths of the different predictor variable sets in accounting for explanation of variance in the effectiveness indicators.

### Dimensionality and Temporal Stability of Effectiveness Indicators

Some of the early empirical work on organizational effectiveness attempted to identify or define the dimensions of effectiveness (Mahoney & Weitzel, 1969; Seashore & Yuchtman, 1967). As we now know, such research is not likely to be successful because different constituencies might produce different dimensions. But, even though some "true" set of dimensions might never be identified, it remains important to examine the

dimensionality and stability of outcomes used to index effectiveness if for no other reason than proper statistical analysis and interpretation of the data.

There were 14 variables used to index effectiveness in the present study. These variables, their means, standard deviations, and intercorrelations are presented in Table 1. Inspection of means shows that sales per hour increased each year, volume divided by cost declined in 1977 but increased again in 1978, turnover among managers first declined then increased a small amount, and turnover among sales personnel steadily increased. Finally, sales personnel were slightly higher in reported job satisfaction than were managers. Inspection of correlations shows that variables of the same type were relatively highly intercorrelated with each other across the three year period.

To obtain a better understanding of the dimensionality and stability of these variables, a principal components analysis with varimax rotation was conducted. Following the recommendation of Tucker (1977, personal communication), factor analysis is used first to identify the number of components that might exist. Then, this number is specified in the principal components analysis. The factor analysis suggested four components, and a four component principal component solution was computed. The results are presented in the bottom half of Table 1. The first component accounted for 41.5 percent of the total variance and consisted of the three volume divided by cost measures. The second component accounted for 28.2 percent of the total variance and consisted of the three sales per hour measures. The third component accounted for 16.5 percent of the total variance and consisted of the two satisfaction measures. Finally, the fourth component accounted for 13.8 percent of the variance and consisted of manager and sales personnel turnover. As might be expected, the loadings on the last component were not as pronounced as the loadings on the other components. But, it is obvious that the last component is the turnover component.

These analyses suggest that the effectiveness indicators chosen for investigation can be reduced into the four components of sales per hour, volume divided by cost, satisfaction, and turnover. One interpretation of this finding is that the measures are multidimensional and that they represent sales volume, sales efficiency, employee attitudes, and employee behaviors. In addition, the analyses suggest that time, within the three year period of measurement, is not a dimension that appears relevant to later analyses. This is particularly evident for sales per hour and volume divided by cost.

#### Dimensionality and Temporal Stability of Predictors

This section will repeat the analytical procedures on the predictor sets of: (a) environmental variables, (b) management personnel characteristics, (c) sales personnel characteristics. Climate, or the measure of informal organizational arrangements, will be discussed in the next section.

Table 2 shows the means, standard deviations, and intercorrelations for the seven environmental variables. Discretionary income (Buying Power) shows steady increases as would be expected due to inflation. Unemployment rates show steady declines. Obviously, location remained constant with 104 (73 percent) stores found in shopping malls. Location was not correlated with any of the other environmental variables. Buying Power tended to be negatively correlated with unemployment rate, but the correlations were not large even though they were statistically significant. Buying Power and unemployment tended to be highly related across the three year period.

A factor analysis of the variables suggested a three component solution for the principal components analysis. The results of this analysis are presented in the bottom half of Table 2. The first component accounts for 52.5 percent of total variance and consists of the three Buying Power measures. The second component accounts for 32.3 percent of the variance and consists of the three unemployment measures. Finally, location is the third component, accounting for 15.2 percent of total variance. As with the effectiveness indicators, time was not found to be an important dimension. These findings suggest that at least with regard to the variables measured, the stores were located in stable and probably predictable environments. Of interest, the components were remarkably "clean" with the largest variable loading on a different component being .15.

Descriptive statistics and analyses for manager personnel characteristics are presented in Table 3. Tenure averaged approximately 14 years of service with slight increases from year to year. Education was stable with the average management staff having an average of a college degree. Ability test score means also were stable. Performance ratings showed an increase and then a decrease. In general, tenure was negatively correlated with level of formal education and unrelated to ability or performance. Education showed inconsistent evidence of being positively correlated with ability and education was unrelated to performance.

Finally, ability was unrelated to performance.

Factor analysis suggested that four components be specified in the principal components analysis. As shown in the bottom half of Table 3, the first component was tenure, accounting for 43.1 percent of the total variance. The second component was ability, accounting for 26.1 percent of the variance. The third component was education, accounting for 17.8 percent of the variance. The final component was performance, accounting for 13.0 percent of the variance. As with the environmental variables, the loadings were very easy to interpret and presented few instances of a variable loading on more than one component. Also, consistent with the emerging trend, year of measurement appears to be relatively unimportant when compared with type of variable.

Descriptive statistics, intercorrelations, and the results of the principal components analysis for sales personnel characteristics are presented in Table 4. Average number of years service declined slightly during 1977 but increased again slightly the next year. The average of approximately seven years of tenure is almost three times higher than the industry average for wholesale and retail organizations based on Department of Labor Statistics published in 1975. Education levels were steady over the three years and suggest that the average store had sales employees who averaged between a high school degree and some college work. Ability score means showed a very slight decline. Recall that these means are not comparable with the means from managers because different tests were used. Finally, there appears to be a steady decline in the percentage of the sales force that completed the in-store basic training program, with the average being about 13 percent. Industry data were not available for comparison so it is difficult to judge these figures, although they intuitively might appear to be rather low. It should be pointed out, however, that the standard deviations were very large, suggesting that some store managers utilized the training function to a far greater extent than did other store managers. Inspection of correlations shows that tenure was consistently and negatively correlated with level of formal education and scores on the ability tests. Education was positively correlated with ability and with utilization of the training function within the store. Ability also was positively correlated with the percentage of employees receiving training. The positive relationship between training utilization and both education and ability appears counter-intuitive. One might expect training to compensate for inability to select quality employees, and thus a negative correlation would result. On the other hand, training utilization might depend on the potential of the candidates to benefit from training, and thus a positive correlation would result. Or, a third explanation is that given an overall high ability sales staff, those selected employees low on ability need training to acquire equivalent skills. This also could produce a positive correlation. Unfortunately, in the absence of individual level data, the above explanations are speculations that can not be tested.

Factor analysis suggested that four components be specified in the principal components analysis. The results are presented in the bottom half of Table 4. The first component accounted for 44.4 percent of the total variance and consisted of training. The second component accounted for 23.7 percent of the variance and consisted of ability. The third component accounted for 18.1 percent of the variance and consisted of education. Finally, the fourth component accounted for 13.8 percent of the variance and consisted of tenure. Again, the loadings were easy to interpret and year of measurement was not a relevant dimension.

In summary, the results presented in Tables 2, 3, and 4 indicate that the 31 separate measures can be meaningfully reduced to 11 measures. Year of measurement was never shown to be a separate dimension. Correlations among the same variables over the three year period were generally quite high. Thus, although mean values might change from one year to the next, the relative standing among the 142 stores on those mean values was very consistent.

#### Examination of Climate Means and Distances

Aggregation of individual descriptions of informal organizational arrangements to produce an organizational level mean score might not be justified if considerable variation exists within the organization (James, 1982). The most common procedure used to decide whether aggregation is reasonable involves ANOVA with organization as the independent variable and employee ratings as the dependent variable. Observation of a significant F value would signify greater between organization variance in responses than within organization responses. Computation of eta-squared values, intra-class correlations, and Spearman-Brown estimates from the ANOVA table would aid interpretation (c.f., Jones & James, 1979).

One-way ANOVA's were conducted using individual manager ratings of leadership practices and organizational practices and individual sales personnel ratings of leadership practices and organizational



practices. All four ANOVA's were significant beyond the .001 level of probability, suggesting that differences among stores was greater than differences within stores. Eta-squared values ranged from a low of .06 to a high of .17, with a median of .125. Intra-class correlations ranged from a low of .04 to a high of .11, with a median of .085. Spearman-Brown estimates ranged from a low of .71 to a high of .91, with a median of .785. These results are highly similar to those reported by James (1982) in his review of the literature, and suggest that climate as measured in the present study represents a characteristic of the organization (store) more than it represents ideosyncratic perceptions of employees.

Climate means, standard deviations, and intercorrelations for both managers and sales personnel are presented in Table 5. Mean scores suggest that on the average, employees describe climate as being more participative and supportive than autocratic and non-supportive, although some stores definitely are rated on the other side of the mid-point. Mean differences exist between managers and sales personnel on climate means and on climate distances. Computation of t-values indicates managers as a group describe leadership and organizational practices as being more participative (t-values equal 2.85 and 6.05 respectively,  $N = 142$ ) than do sales personnel; and, that managers as a group display greater agreement on leadership and organizational practices (t-values equal 28.83 and 28.69 respectively,  $N = 142$ ) than do sales personnel. The magnitudes of the differences, however, were very slight in the case of climate means. These findings are consistent with past climate research suggesting effects due to level in the organization (Joyce & Slocum, 1979). The present results extend this pattern to measures of agreement as well as replicating effects on climate means. It should be noted that differences in distance scores for the two scales should not be interpreted as greater agreement on leadership practices than on organizational practices. The range distance scores can take is a function of the number of items in the scale. The greater the number of items, the greater the potential for disagreement. Consequently, scores on the distance measure can not be compared within the same employee group. Inspection of the correlation matrix, however, suggests that even though t-tests reveal differences, the ratings given by the two groups are all significantly correlated beyond the .001 level of probability. The correlations also indicate that high means are associated with small distance scores. It is not clear, at the present time, why greater agreement should be found in participative climates.

Factor analysis of the climate scores was conducted separately for the two employee groups. For the manager sample, a one component solution seemed appropriate, but for the sales sample, a two component solution seemed better. Because very little research has examined climate means and climate distances, it was decided to use a two component solution for both analyses. The results are presented at the bottom of Table 5. For managers, the first component accounts for 74.1 percent of the variance. This component consists of a high leadership mean and a low leadership distance, although organization mean also receives a substantial loading. The second component accounts for 25.9 percent of the variance and consists of a low organization mean and a high organization distance. Organization mean seems to load on both components, however. These results indicate that the primary basis of distinction exists between leadership practices and organizational practices, and not between means and distances. A different finding was found for the sales sample. The first component accounts for 66.8 percent of the total variance and consists of leadership and organization mean scores. The second component accounts for 33.2 percent of the variance and consists of the two distance scores. The decision was made not to reduce these variables any further, but to use all four measures for each employee group.

#### Climate as a Lag or Lead Variable

To investigate whether climate in the present study was a lag or lead variable, the measures were correlated with sales per hour, volume divided by cost, and turnover for each of the three years. Remember that climate and satisfaction were assessed only during 1977. If climate were a lead variable of performance, it might be expected to correlate most highly with 1978 performance data. But, if climate were a lag variable, it might be expected to correlate most highly with 1976 performance data.

Table 6 contains the results of correlating 1977 climate data with 1976 and 1978 performance data. The key finding to look for is a significant difference between correlations, not that one correlation is significantly different from zero while another correlation is not. A total of 24 different comparisons could meaningfully exist. Table 6 shows that only three differences reached the .05 level of significance, and that the magnitudes of the differences were rather small. A small difference can be statistically significant, however, when two of the variables are highly correlated, as was the case in the present study. If a trend can be seen in the results, it would appear to favor climate as a lead variable rather than as a lag variable.

But, the results are too weak to provide conclusive evidence within the time frame studied.

Based on these analyses, the climate measures were judged to be valid indicators of leadership practices and organizational practices. It also was determined that climate was not differentially related to performance measures that precede or postdate a year in either direction from the time of climate measurement.

#### Relationships among Predictor Variables and Effectiveness Indicators

The final set of analyses examines variation in the effectiveness indicators as a function of environmental variables, climate variables, and characteristics of personnel.

The results presented in Tables 1, 2, 3, and 4 indicate that the variables included in the present study were rather stable over the three year time period. The results presented in Table 6 indicate that climate appears to be neither a lead or a lag variable of performance. The high stability of scores makes it very unlikely that differential relationships would be found over time. Consequently, the decision was made to use data from 1977 for all further analyses. This would greatly simplify analysis and presentation of results.

When multiple predictor variables are used in regression and canonical correlation, the degree of collinearity among predictors should be examined. Excessive collinearity can make weights unstable, which may confuse interpretation. The correlation matrix for the predictor variables is presented in Table 7. With the exception of the climate variables, the different predictors do not show high covariation. Buying power is negatively correlated with unemployment rate, as might be expected, and it is associated with large climate distance scores and long management tenure. Unemployment is negatively correlated with climate means and management tenure, and it is positively correlated with use of training. Stores in shopping malls have greater agreement among sales personnel on organizational practices, and have sales staffs with lower tenure but higher education and ability levels than do stores in downtown and neighborhood locations. Climate ratings from managers were correlated with climate ratings from sales personnel and with two other variables: leadership distance scores were negatively related with both manager education and sales staff ability. Climate ratings from sales personnel also were weakly related to variables other than climate. Organizational practices means were positively correlated with manager performance, but both climate mean scores were negatively correlated with use of training. Leadership distance scores were negatively correlated with manager education but positively correlated with manager performance. Organization distance scores were negatively correlated with sales personnel ability. Management tenure was positively related with sales tenure, but negatively related with management education. Management education was negatively correlated with utilization of the training function within the store while management ability was positively correlated with this variable. Management performance was negatively correlated with average ability of the sales staff. Sales staff tenure was negatively correlated with sales education and ability. Sales staff education was positively correlated with sales staff ability and use of training. Finally, sales staff ability also was positively correlated with use of training.

Few discernible patterns seem to be present among the variables. Climate ratings were intercorrelated. Tenure levels for management and sales personnel were positively related. Management staffs with longer tenure seemed to be in wealthier locations. And, sales staff ability, education, and exposure to training were positively related to each other and tended to be negatively correlated with sales staff tenure.

Correlations among predictor variables and the effectiveness indicators are presented in Table 8. Beginning with the environment set, buying power was correlated only with volume divided by cost,  $r = .26$ . Contrary to expectations, unemployment was positively correlated with manager turnover,  $r = .25$ , and negatively correlated with manager and sales staff ratings of job satisfaction,  $r = -.21$  and  $r = -.27$  respectively. Location was not related to any of the effectiveness measures.

Manager ratings of climate were related to all of the effectiveness measures. Leadership means were negatively correlated with manager turnover,  $r = -.23$ , and positively correlated with both manager and sales staff ratings of job satisfaction,  $r = .61$  and  $r = .45$  respectively. Organization means were negatively correlated with sales per hour,  $r = -.18$ , volume divided by cost,  $r = -.24$ , and manager turnover,  $r = -.17$ ; and, they were positively correlated with manager and sales staff job satisfaction,  $r = .91$  and  $r = .62$  respectively. Leadership distance was negatively associated with manager and sales satisfaction,  $r = -.43$  and  $r = -.39$ . Finally, distance scores for organizational practices were positively correlated with sales per hour,  $r = .21$ , volume divided by cost,  $r = .31$ , and manager turnover,  $r = .21$ , while being negatively correlated with manager and sales staff satisfaction,  $r = -.54$  and  $r = -.43$ .

Sales staff ratings of climate also were correlated with most of the effectiveness measures. Sales

ratings of leadership means were negatively correlated with manager turnover,  $r = -.19$ , and positively correlated with manager and sales satisfaction,  $r = .42$  and  $r = .56$ . Mean level of organizational practices were negatively correlated with sales per hour,  $r = -.18$ , and volume divided by cost,  $r = -.17$ . This climate measure was positively associated with manager and sales satisfaction,  $r = .67$  and  $r = .90$ . Sales staff ratings of leadership distance was correlated only with sales staff ratings of job satisfaction,  $r = -.30$ . Finally, the organization distance score was positively correlated with sales per hour,  $r = .23$ , and manager turnover,  $r = .19$ , and negatively correlated with manager and sales staff ratings of job satisfaction,  $r = -.41$  and  $r = -.49$ .

Manager demographics tended to be unrelated to the effectiveness indicators. Only one of 24 correlations was statistically significant. Unexpectedly, manager ability was negatively correlated with sales per hour,  $r = -.30$ .

Sales staff demographics were associated with most of the effectiveness indicators. Tenure was positively correlated with sales per hour,  $r = .23$ , and negatively correlated with turnover among sales personnel,  $r = -.33$ . Level of education was negatively correlated with both manager and sales staff job satisfaction,  $r = -.18$  for both groups. Sales staff ability was positively correlated with sales per hour,  $r = .20$ , and volume divided by cost,  $r = .22$ . Finally, training was positively correlated with turnover among sales personnel, and it was negatively correlated with both manager and sales staff satisfaction,  $r = -.20$  and  $r = -.21$ .

In many ways, the results shown in Table 8 were somewhat unexpected. Most noteworthy were: (a) the weak associations between environmental variables and effectiveness indicators, (b) the positive correlation between unemployment rate and manager voluntary turnover rate, (c) the negative correlations between unemployment rate and employee job satisfaction, (d) the negative correlations between economic measures of store performance and climate means, (e), the positive correlations between economic measures of store performance and climate distances, (f) the negative correlation between management ability and sales per hour, and (g) the negative correlation between use of training and employee satisfaction.

The remaining analyses are multivariate. Table 9 reports the results from regressing each of the effectiveness indicators on the variable sets of environment, climate, and demographics. Tables 10 through 15 report the results of canonical correlations. Canonical correlations were used to examine the effectiveness indicators simultaneously as a set. Also, to simplify analyses, manager climate, demographics, turnover, and satisfaction were kept separate from sales staff climate, demographics, turnover, and satisfaction. That is, the multivariate analyses did not consider manager climate, for example, as a predictor of sales staff turnover.

Table 9 shows the percent of variance accounted for in each of the effectiveness indicators as a function of different combinations of the predictor sets. This allows for some examination of the relative "importance" of each of the predictor sets. Specifically, hierarchical regression was used to build different models. Also, an estimate of the "unique" variance associated with each predictor set was computed. This figure is the drop in R-square that results when one of the predictor sets is removed from the full model. As seen in the table, sales per hour was not significantly related to the three environmental variables, but it was related to manager climate, manager demographics, sales personnel climate, and sales personnel demographics. Volume divided by cost was significantly related to the environment and to both manager and sales personnel ratings of climate, but it was not related to sales demographics. However, when estimates of unique variance are examined, sales demographics account for as much variance as does the environment. Voluntary turnover among managers was associated with the environment and with climate, but not with demographics. Voluntary turnover among sales personnel, however, was only associated with demographics. Finally, manager ratings of job satisfaction were related to the environment and to climate, but not to manager demographics. Sales staff ratings of job satisfaction were related to all three predictor variable sets. Inspection of estimates of unique variance generally show similar relationships, with a few differences being evident. The complete set of predictor variables were able to explain between 16 percent and 26 percent of the variance in sales per hour, volume divided by cost, and voluntary turnover rates. A much greater amount of variance in satisfaction was accounted for, but this is almost certainly due to covariation between climate and satisfaction.

Relationships among variable sets were examined in a similar manner using canonical correlation. For each analysis, several pieces of information were computed; including weights and correlations for predictor variates, weights and correlations for criterion variates, the significance of the canonical correlation, and the redundancy index associated with each canonical correlation. Weights and correlations are used to aid

identification of variables that contribute to the predictor variate or to the criterion variate. The redundancy index provides an estimate of the amount of variance explained in variables in the criterion set from knowledge of variables in the predictor set and is analogous to R-square in regression (c.f., Cooley & Lohnes, 1971).

Table 10 contains the results for effectiveness as a function of the environment. Taking the manager sample first, there was one significant canonical correlation accounting for 3.65 percent of the variance. Basically, stores with high sales per hour, high volume over cost, low turnover, and high satisfaction were located in environments that had low unemployment rates, high community wealth, and shopping mall locations. Turning to the sales personnel sample, there were two significant canonical correlations. The first canonical correlation accounted for 3.61 percent of the variance. Stores with highly satisfied sales personnel were located in areas of low unemployment and low community wealth. The second canonical correlation accounted for 2.50 percent of the variance. Stores with low sales per hour and low volume over cost figures were located in areas of high unemployment and low community wealth.

Table 11 looks at effectiveness as a function of climate. For managers, there were two significant canonical correlations. The first one accounted for 24.60 percent of the variance. Stores with highly satisfied management staffs had participative and supportive climates with high agreement among respondents, i.e., small distance scores. The second canonical correlation accounted for 2.04 percent of the variance. Stores with low sales per hour and volume over cost figures, but also with low turnover tended to have high agreement on descriptions of organizational practices but low agreement on descriptions of leadership practices. There also is some evidence that organizational practices were more autocratic than participatory. For the sales sample, only one canonical correlation was significant, accounting for 22.75 percent of the variance. Stores with highly satisfied sales staffs had participative and supportive climates with high consensus among respondents.

Table 12 shows the results using personnel characteristics. One canonical correlation accounting for 4.07 percent of the variance was significant with the manager sample. Stores with high sales per hour, low turnover, and high satisfaction had management staffs which, on the average, had low ability test scores. There also is some indication that these staffs were high on tenure and performance. Two canonical correlations were significant for the sales sample. The first correlation accounted for 5.37 percent of the variance. Stores with high sales per hour, but low volume over cost and low turnover were composed of high tenured sales staffs that had not received extensive training. The second canonical correlation accounted for 3.41 percent of the variance. Stores with low sales per hour and low volume over cost figures, but with high satisfaction and low turnover were composed of sales staffs that had low levels of education, low ability scores, and little exposure to training.

Table 13 reports the results for the manager sample when all three predictor variable sets were included simultaneously. There were two significant canonical correlations. The first canonical correlation accounted for 25.3 percent of the variance. Stores with high levels of manager satisfaction, and to some extent low turnover and low volume over cost figures, had climates described as participative and supportive with substantial agreement on the ratings. The second canonical correlation accounted for 6.58 percent of the variance. Stores with low sales per hour and volume over cost figures were located in areas with low community wealth and high unemployment, had consensus on organizational practices but dissensus on leadership practices, and had management staffs that scored well on ability tests.

Table 14 reports the results for the sales sample. Three canonical correlations were significant. The first correlation accounted for 24.08 percent of the variance. Stores with highly satisfied sales personnel had climates described as participative and supportive with considerable agreement among the respondents. The second canonical correlation accounted for 6.14 percent of the variance. Stores with high sales per hour and low turnover were in locations with low unemployment, tended to have participative leadership practices yet dissensus about organizational practices, and had staffs with high tenure and little exposure to training. The third canonical correlation accounted for 5.29 percent of the variance. Stores with high sales per hour, high volume over cost, and high turnover tend to be in shopping mall locations with high community wealth and low unemployment, tend to have participative organizational practices but also have dissensus among respondents, and tend to have sales staffs that are low on tenure, high on education, high on ability, and well trained.

Table 15 attempts to summarize the relative effects of the different predictor sets. For the manager sample, climate seems to account for nearly 10 times the variance in effectiveness as does the environment or management demographics. Most of this variation is due to the relationship between climate and satisfaction.

For the sales sample, climate again accounts for the most variance and the explanation is the same. Demographics, however, account for between eight and 12 percent of the variance in the set of effectiveness indicators.

#### DISCUSSION

Variations in economic, behavioral, and attitudinal outcomes reflecting managerial values of retail store effectiveness were found to be associated with certain key aspects of the stores' environments, the stores' informal organizational arrangements, and the stores' personnel. Thus, there was support for the model of organizational effectiveness developed as part of the research project.

In particular, support was found for the resource dependence model as community economic variables and store location explained between four and seven percent of the between store variance in sales per hour and volume divided by cost. The environment also explained between four and seven percent of the variance in voluntary turnover rates among management staffs, and up to 13 percent of the variance in management and sales staff ratings of job satisfaction.

Employee ratings of informal organizational arrangements, that is, level of support and participation and degree of agreement among respondents, accounted for between three and 11 percent of the variance in sales per hour and volume over cost. Climate also predicted between three and 10 percent of the variance in employee turnover rates. Finally, climate was highly related to employee job satisfaction, accounting for between 68 and 85 percent of between store differences in aggregate employee attitudes.

Personnel characteristics associated with the quality of management and sales staff in the store explained between two and 14 percent of the variance in sales per hour, volume divided by cost, and voluntary turnover rates. Demographics also explained up to seven percent of store differences in aggregate measures of employee job satisfaction.

The study also was able to examine several other questions of importance to the domain of organizational effectiveness research. First, the effectiveness indicators chosen for investigation were found to be multidimensional and to be rather stable over the time span covered. The results provide empirical validation to the belief that organizational performance outcomes consist of economic, behavioral, and attitudinal data (Steers, 1977). In a similar manner, the results showed that variables thought to be antecedents of effectiveness also were multidimensional and stable over time. Although dimensionality and stability can be manipulated through selection of the variables chosen for examination, the present findings confirm expectations based on knowledge of the retail industry. Stores belonging to major retail organizations face environments that are relatively stable, predictable, and simple. The industry is mature, and retail giants operate in a non-innovative but competitive market. The major features of competition are price, quality, and service. Consequently, one would not expect to find evidence of uncertainty or complexity in the environment, and, one would not expect to find dynamic relationships among criteria.

Although the major focus of the study was on indicators of organizational effectiveness, the results contribute to research on organizational climate. Using ANOVA, traditional support was found for the validity of aggregating individual ratings to measures of organizational climate. The results were similar to those reported by James (1982) in his review of the literature. Support also was found for multiple climates. Managers tended to describe the level of participation and supportiveness as being higher than that reported by sales personnel. But, in general, climate descriptions from managers and salespeople were highly intercorrelated, suggesting further evidence for the validity of climate as a construct capable of distinguishing among different organizations. Climate was correlated with voluntary turnover rates for managers. This is perhaps the first report using turnover rates as a criterion of organizational climate. Climate again was highly related to job satisfaction. Whereas this might be viewed as evidence of overlapping constructs (Guion, 1973), it also can be viewed as evidence of tight coupling between the nature of informal organizational arrangements and employee job satisfaction. Climate also was operationalized as a measure of agreement among respondents. Average Euclidian distance scores between pairs of respondents to the items making up the two climate scales were found to be meaningful predictors of organizational outcomes. Canonical correlations showed that both climate level and climate agreement were important for understanding differences in outcomes. Further research should examine agreement as a separate variable of interest. Finally, the results are valuable for understanding the role of climate as a lead or lag variable of organizational performance. Research on survey feedback guided interventions suggest that climate changes precede performance changes by one or two years. Although the present study did not attempt to change climate, there

was virtually no evidence for climate as either a lead or a lag measure. In general, climate scores tended to correlate most highly with performance measures from the same calendar year. Perhaps climate leads performance only when both initially begin at low levels and interventions are designed to improve both. In other situations, the two variables may covary concurrently.

The study also provided an opportunity to examine organization level outcomes associated with the personnel functions of selection and training. Usually, these functions are evaluated at the individual level of analysis, yet it could be argued that the ultimate goal of selection and training is improved organizational performance. The data pertinent to this question produced weak and inconsistent results. Ability was the only managerial variable significantly related to any of the effectiveness indicators and this correlation was in the opposite direction from that expected. Ability and tenure, however, were correlated with performance measures for sales personnel. Sales per hour was highest in stores with long tenured employees who had high ability levels. Training, however, was associated with high turnover and low satisfaction.

Although there was general support for use of the proposed model of organizational effectiveness as a guide to research, the overall findings of the study were unimpressive. The results were weak and several unexpected relationships were observed. These findings are especially troublesome given the care and attention devoted to the selection and measurement of variables, and the use of multivariate statistical techniques that allowed statistical control of extraneous causes. Angle and Perry (1981), in their study of organizational effectiveness within the public transportation industry, suggested that their weak results might be a consequence of their inability to control for such things as management competence, formal organizational arrangements, technology, and the environment. The present study was able to provide substantial control over formal organizational arrangements and technology through sampling of large stores within the same retail organization, and through statistical control of other measured variables of interest. Yet, the results also were weak. The discussion will now turn to a more detailed examination of the findings.

One possible explanation for weak results obtained in the present study could be a restriction in variation among the predictors and the criteria. But, inspection of the standard deviations presented in the Tables, and a more detailed examination of variable ranges and skewness conducted by the author, do not suggest range restriction as a likely explanation. Sales per hour ranged from 53 to 102; the ratio of volume divided by cost of labor ranged from 2.05 to 6.91; voluntary turnover rates among management ranged from 0.00 to 66 percent; and voluntary turnover rates among sales and sales support personnel ranged from 3 to 89 percent. Similar variation existed among the predictors, for example; discretionary income ranged from \$10,291 to \$25,792, unemployment rates ranged from 2.3 percent to 21.2 percent, training ranged from 0.00 to 84 percent of the sales force having completed in-store training, and average management staff tenure ranged from 8.6 years to 23.4 years. None of the variables inspected seemed to lack reasonable variation to the extent that statistical relationships would be difficult to detect.

Although restriction of range probably is not a statistical problem in the present data, the general idea of lack of variation still might be important for understanding the results. The present study examined 142 stores over a three year period. Time was not a critical factor. The stores essentially were minor variations of each other. All were linked to corporate headquarters and had limited local autonomy over product line, pricing, marketing, and so forth. Although this initially was viewed as a positive design feature of the study because it provided some control over strategy, formal organizational arrangements, and technology, this design feature also might have minimized the impact of variation among the other variables on store performance. Consider the major retail organizations that operate within the United States. Sears, Penneys, Montgomery Ward, K-Mart, Dayton Hudson, Gamble-Skogmo, Bloomingdales, Abercrombie & Fitch, Bonwit Teller, Neiman-Marcus, and other retail giants in the industry have different corporate strategies, use different formal organizational arrangements, and use different technologies. These organizational features might be more important in explaining differences in store performance among stores of different corporations than would differences in informal organizational arrangements, local environments, and quality of personnel explain differences in store performance of stores belonging to the same retail organization. Put another way, there may be greater differences in performance outcomes among a Penney store, a Sears store, and a K-Mart store all in the same shopping location than there would be differences between three Penneys' stores in three different cities. Obviously, community wealth would impact the three Penneys' stores, but, assuming effective site location decisions, this environmental variable might have minimal impact.

The argument being developed suggests that differences in organizational performance should focus on differences that exist between organizations. In these instances, critical factors include such things as

industry, strategy, formal organizational arrangements, and technology. Once these factors have been held constant, it still remains possible to explain variation in performance among different units within the same organization, but, the degree of "connectedness" among variables at this level of analysis might be weakened. For example, a carefully placed McDonald's restaurant might be quite successful regardless of reasonable variation in manager competence, employee skill and motivation, and local restaurant "climate."

These comments are not meant to minimize the importance of managerial style, employee competence, climate, and so forth as variables worthy of investigation. Weiner and Mahoney (1981) demonstrated that Pfeffer and Salancik (1978) and Hall (1977) might be underestimating the importance of management actions and overestimating the external control of organizations. Also, it is not going to be useful to engage in arguments over the external versus the internal control of organizations. Both are important. Rather, future research must be designed to better understand the relative and dynamic effects various factors have on organizational outcomes.

At the present time, the following relationships seem to be reliable. Based on Lieberman and O'Connor (1972), Weiner and Mahoney (1981), Salancik and Pfeffer (1977), Pennings (1975), and the present study, industry differences have the greatest impact on economic performance outcomes. Company differences in such things as strategy, formal organizational arrangements, and technology are next in importance for these outcomes. Finally, informal organizational arrangements, personnel, history, and resource availability are less important. Somewhat surprisingly, availability of resources as measured by such things as GNP and community wealth repeatedly account for less than 5 percent of the variance in profits, sales, and other economic indicators (c.f., Lieberman & O'Connor, 1972; Salancik & Pfeffer, 1977; Pennings, 1975; Weiner & Mahoney, 1981; and the present results). It should be noted, however, that resource availability might be more critical for other organizational outcomes such as long term growth and decline, and organizational birth and mortality rates (Aldrich, 1979).

What seems to be emerging from the above described studies is the importance associated with choices of variables to study and the realization that different levels of "connectedness" can exist among variables. As was just noted, resource availability might be more tightly coupled with organizational birth rates than with profitability among already existing organizations, and, employee satisfaction and turnover might be more tightly coupled with informal organizational arrangements and personnel policies than with local unemployment rates. Thus, the researcher must first define the criteria of interest, then the researcher must identify the variables most likely to have an impact on the criteria, and finally, the researcher must consider the relative strength of coupling among the variables. This last point is important. Research implicitly operates on the assumption that predictors either are important or they are not important for understanding differences in criteria. But, in reality, this dichotomy is a continuous distribution of relative effects. Rather than hoping to find a light switch that is either "on" or "off", research in the domain of organizational effectiveness should look for rheostatically controlled switches that allow various degrees of coupling. Some implications of these ideas are developed in a recent paper by Ford and Schellenberg (1982).

Exploration of relationships among climate and the economic outcomes of sales per hour and volume divided by cost will provide a good example of the types of issues researchers in the organizational effectiveness domain must face. Hage (1965) argues that centralized decision making will be associated with better efficiency of operation. Likert (1967) argues the opposite. Management styles that encourage employee participation and involvement will be associated with better efficiency. In the present study, the climate measures were developed based on Likert's work, and a positive causal relationship was expected. However, there need not be any direct relationship between participation and performance. Rather, a variety of relationships might exist depending on the situation and the criterion. Degree of participation might be positively or negatively causally related to efficiency, efficiency might be positively or negatively causally related to participation, or both variables might be positively or negatively related to each other because of a strong relationship to some third variable and not because of any direct linkage.

The present results suggested that stores with high sales per hour and high volume divided by labor cost figures had climates that were more autocratic and unsupportive than they were participative and supportive. Also, the greater the dissensus within the store, the better the performance. If these findings are replicated, does this imply that store managers should be autocratic and behave in a way to create lack of agreement if they want high performance? Is Hage correct and is Likert's empirical research just Type I error? The answer is neither. In the present study, it appears that the expectation of a simple causal relationship between climate and performance was naive.

In order to better specify the linkages, several path analyses were conducted using sales per hour,

volume divided by cost, climate, total sales volume, number of employees, and community buying power. What follows is a summary of the results. Annual sales volume is a positive function of buying power. Sales per hour is a positive function of sales volume. Number of employees also is a positive function of sales volume. Volume divided by labor cost is a positive function of volume, but a negative function of the number of employees. Sales per hour and volume divided by cost are not highly related to each other. Also, neither variable was related to climate or to buying power. Climate, on the other hand, is effected by sales volume and number of employees, and was unrelated to buying power or to the performance outcomes. More specifically, level of participation is negatively related to volume but positively related to number of employees. Holding number of employees constant, as volume increases the level of participation decreases. Also, holding volume constant, as the number of employees increases the level of participation increases. Also, when number of employees is held constant, increased volume is associated with greater dissensus. But, when volume is held constant, increased number of employees is associated with greater consensus. Thus, conditions that create high volume over cost figures, i.e., high volume with few employees, are the same conditions that create nonsupportive climates with high dissensus. Climate and efficiency are not reciprocally linked, but their association comes about through shared causes.

What does this mean for understanding retail store performance? It means that store sales volume depends on placement of large buildings in wealthy communities. It also means that efficiency depends on matching sales force size to volume. In contrast to production, where size of work force affects number of units produced, service industries must rely on location, product quality, and service to effect volume. The task is to have a sufficient number of employees to handle customer demand. Too few employees could cause customer dissatisfaction, but, too many employees needlessly raises labor costs. Thus the store manager must monitor sales volume to make decisions about size of sales staff. However, the store manager faces incompatible goals. The cost of economic efficiency is an autocratic and unsupportive climate. Furthermore, such climates are likely to produce low employee satisfaction, low employee involvement, and high employee turnover. To the extent that these outcomes are important, the manager must satisfice rather than maximize. The nature of the industry and the technology suggest that economic benefits are not likely to be effected in a positive way through the creation of participative and supportive climates. This is in contrast, however, to other industries and technologies where participation might be critical. For example, Ford Motor company is finding participation to greatly improve the quality and efficiency of small truck production in their Louisville, Kentucky plant (Fortune, 1983).

Perhaps one of the most important findings from the present investigation is the need to carefully consider cause and effect linkages on a case by case basis, and to design research that confirms these linkages. Industry characteristics, production versus service emphasis, and nature of technology are some variables that should be considered. Organizational outcomes are the result of dynamic, reciprocal, and often complex interrelationships. The widely accepted view of contingency theory, which states that empirical regularities depend on characteristics of the organization and characteristics of the context (environment), represents a realistic approach to the study of organizations. Although such a view produces neither simple nor generalizable conclusions, the conclusions are likely to be accurate. Once critical contingencies or situational factors are identified, organizational design decisions can be made with a better awareness of likely consequences. When consequences can be specified and trade-offs understood, the evaluation of organizational effectiveness can proceed. Although different constituencies may still adhere to different value systems, better decisions should be possible and better organizations should result.

#### SUMMARY

The present study investigated relationships among indicators of retail store effectiveness and predictors of effectiveness. A model of organizational effectiveness research was proposed. Based on the model, economic, behavioral, and attitudinal outcomes were investigated as a function of time, environmental resources, informal organizational arrangements, and personnel. Results suggested that performance can be explained through knowledge of select environmental and organizational variables. The results also demonstrate the complexities associated with doing research on organizational effectiveness. Effectiveness is multidimensional and multidetermined. Furthermore, the relative strengths of various linkages can vary depending in key situational factors. The relationship between climate and efficiency was used as an example of some of the complexities involved. Value judgements about organizational effectiveness should be made with an understanding of relationships among antecedent variables and consequent outcomes. Only then can



organizations be designed to achieve fully the desired goals of society.

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FOOTNOTE

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EXHIBIT 1. A MODEL TO GUIDE RESEARCH ON ORGANIZATIONAL EFFECTIVENESS

ORGANIZATIONAL OUTCOMES = f ( ORGANIZATION, ENVIRONMENT )

EFFECTIVENESS INDICATORS = f ( ORGANIZATION OUTCOMES )

ORGANIZATIONAL COMPONENTS

STRATEGY:

CORPORATE STRATEGY  
BUSINESS STRATEGY  
OPERATIONAL STRATEGY

TECHNOLOGY:

METHODS OF OPERATION  
EQUIPMENT  
KNOWLEDGE

FORMAL ORGANIZATIONAL ARRANGEMENTS:

STRUCTURE  
CONTROL AND MEASUREMENT SYSTEMS  
PERSONNEL POLICIES AND PRACTICES

INFORMAL ORGANIZATIONAL ARRANGEMENTS:

VALUES, NORMS, BELIEFS  
LEADERSHIP STYLES  
INTERACTION PATTERNS

PERSONNEL:

ORGANIZATIONAL ATTACHMENT  
KNOWLEDGE, SKILLS, ABILITIES  
DEMOGRAPHY

HISTORY:

PATTERNS OF PAST BEHAVIOR  
INTERPRETATION OF SIGNIFICANT EVENTS

ENVIRONMENTAL COMPONENTS

DECISION-MAKING CONTEXT:

PREDICTABILITY  
STABILITY  
COMPLEXITY

RESOURCES:

AVAILABILITY  
CONTROLLABILITY  
DISPERSION

EXTERNAL ORGANIZATIONAL CONSTITUENCIES:

VALUES  
POWER

TABLE 1

INTERCORRELATION MATRIX, MEANS, AND STANDARD DEVIATIONS: EFFECTIVENESS INDICATORS<sup>1,2</sup>

VARIABLE	MEAN	S.D.	SALES/HOUR			VOLUME/COST			MGR TURNOVER			SALES TURNOVER			MGR SALES	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
(1) SALES PER HOUR 76	66.78	8.82	-----	86	60	09	24	28	01	-14	05	01	-01	-10	-17	-16
(2) SALES PER HOUR 77	78.20	9.31		-----	74	01	15	22	03	-13	00	-04	-04	-08	-09	-07
(3) SALES PER HOUR 78	86.21	8.04			-----	-02	07	20	-01	-00	01	-08	04	-03	-04	-11
(4) VOLUME/COST 76	4.83	.92				-----	88	66	00	05	11	12	12	13	-24	-17
(5) VOLUME/COST 77	4.45	.83					-----	80	02	06	15	07	09	09	-29	-23
(6) VOLUME/COST 78	4.84	.98						-----	10	03	15	-01	10	18	-30	-30
(7) TURNOVER:MGR 76	4.83	10.21							-----	18	17	15	16	28	-05	10
(8) TURNOVER:MGR 77	3.44	8.96								-----	13	07	20	18	-22	-12
(9) TURNOVER:MGR 78	3.86	7.95									-----	00	11	15	-15	-10
(10) TURNOVER:SALES 76	8.64	5.35										-----	11	10	13	08
(11) TURNOVER:SALES 77	11.32	8.51											-----	43	-03	-04
(12) TURNOVER:SALES 78	13.97	6.75												-----	03	09
(13) SATISFACTION:MGR 77	28.70	1.43													-----	69
(14) SATISFACTION:SALES 77	29.01	1.13														-----

<sup>1</sup> N = 142, decimal points omitted from correlation matrix<sup>2</sup>  $r > .17$ ,  $p < .05$ ;  $r > .22$ ,  $p < .01$ 

## PRINCIPAL COMPONENTS ANALYSIS OF EFFECTIVENESS INDICATORS

	COMPONENTS			
	I	II	III	IV
SALES PER HOUR 76	.15	.85	-.09	-.06
SALES PER HOUR 77	.06	.99	-.01	-.06
SALES PER HOUR 78	.01	.73	-.05	.02
VOLUME/COST 76	.88	-.04	-.06	.10
VOLUME/COST 77	.98	.09	-.11	.07
VOLUME/COST 78	.74	.21	-.19	.16
TURNOVER:MGR 76	-.00	.04	.04	.44
TURNOVER:MGR 77	-.01	-.11	-.20	.37
TURNOVER:MGR 78	.10	.02	-.13	.26
TURNOVER:SALES 76	.08	-.04	.16	.17
TURNOVER:SALES 77	.06	.01	.01	.53
TURNOVER:SALES 78	.08	-.05	.11	.66
SATISFACTION:MGR 77	-.19	-.06	.83	-.09
SATISFACTION:SALES 77	-.16	-.07	.78	.02
EIGENVALUE	3.07	2.09	1.22	1.02
PERCENT VARIANCE	41.5	28.2	16.5	13.8

TABLE 2

INTERCORRELATION MATRIX, MEANS, AND STANDARD DEVIATION: ENVIRONMENTAL VARIABLES<sup>1,2</sup>

VARIABLE	MEAN	S.D.	BUYING POWER    UNEMPLOYMENT    LOC						
			1	2	3	4	5	6	7
(1) BUYING POWER 76	15109.40	2555.68	-----	98	97	-11	-23	-23	-01
(2) BUYING POWER 77	16122.78	2755.42		-----	98	-15	-27	-25	-03
(3) BUYING POWER 78	17678.15	3035.74			-----	-16	-27	-24	-02
(4) UNEMPLOYMENT 76	7.61	2.42				-----	87	69	08
(5) UNEMPLOYMENT 77	7.13	2.44					-----	88	02
(6) UNEMPLOYMENT 78	6.29	2.45						-----	02
(7) LOCATION <sup>3</sup>	.73	.45							-----

<sup>1</sup> N = 142; decimal points omitted from correlation matrix<sup>2</sup>  $r > .17$ ,  $p < .05$ ;  $r > .22$ ,  $p < .01$ <sup>3</sup> Mall location = 1; Downtown/Neighborhood location = 0

## PRINCIPAL COMPONENTS ANALYSIS OF ENVIRONMENTAL VARIABLES

	COMPONENTS		
	I	II	III
BUYING POWER 76	.99	-.09	.00
BUYING POWER 77	.98	-.13	-.02
BUYING POWER 78	.98	-.13	-.01
UNEMPLOYMENT 76	-.03	.92	.07
UNEMPLOYMENT 77	-.15	.97	-.00
UNEMPLOYMENT 78	-.15	.90	-.02
LOCATION	-.01	.03	.99
EIGENVALUE	3.47	2.13	1.00
PERCENT VARIANCE	52.5	32.3	15.2

TABLE 3

INTERCORRELATION MATRIX, MEANS, AND STANDARD DEVIATIONS: MANAGEMENT DEMOGRAPHICS<sup>1,2,3</sup>

VARIABLE	MEAN	S.D.	TENURE			EDUCATION			ABILITY			PERFORMANCE		
			1	2	3	4	5	6	7	8	9	10	11	12
(1) TENURE 76	14.24	3.35	-----	92	83	-54	-43	-46	-10	-09	-08	14	08	04
(2) TENURE 77	14.78	3.43		-----	88	-47	-42	-49	-08	-10	-10	19	12	05
(3) TENURE 78	15.38	3.64			-----	-46	-32	-49	-05	-06	-10	11	12	-00
(4) EDUCATION 76	4.05	.55				-----	71	72	14	10	07	10	-03	-02
(5) EDUCATION 77	4.06	.62					-----	70	16	13	15	02	-01	-02
(6) EDUCATION 78	4.11	.55						-----	15	19	27	05	-04	-02
(7) ABILITY 76	113.24	10.70							-----	81	63	-05	17	06
(8) ABILITY 77	113.34	10.57								-----	78	-00	14	06
(9) ABILITY 78	113.58	9.65									-----	-02	14	07
(10) PERFORMANCE 76	57.80	3.60										-----	30	30
(11) PERFORMANCE 77	59.66	5.24											-----	54
(12) PERFORMANCE 78	56.34	5.32												-----

<sup>1</sup> N = 142, decimal points omitted from correlation matrix<sup>2</sup>  $r > .17$ ,  $p < .05$ ;  $r > .22$ ,  $p < .01$ <sup>3</sup> Tenure recorded in years; Education: 1 = some H.S.; 2 = H.S. degree; 3 = some college; 4 = college degree; 5 = graduate work; Ability recorded as Verbal + Quantitative test scores; and Performance based on the summation of 9 dimensions each rated on a 9 point scale.

## PRINCIPAL COMPONENT ANALYSIS OF MANAGER DEMOGRAPHICS

	COMPONENTS			
	I	II	III	IV
TENURE 76	.90	-.04	-.30	.05
TENURE 77	.93	-.05	-.26	.09
TENURE 78	.91	-.02	-.23	.03
EDUCATION 76	-.30	.03	.85	.02
EDUCATION 77	-.18	.09	.86	-.01
EDUCATION 78	-.30	.16	.83	-.01
ABILITY 76	-.02	.87	.08	.04
ABILITY 77	-.03	.94	.07	.04
ABILITY 78	-.04	.87	.09	.05
PERFORMANCE 76	.27	-.11	.23	.62
PERFORMANCE 77	.04	.16	-.07	.82
PERFORMANCE 78	-.08	.04	-.09	.84
EIGENVALUE	4.11	2.49	1.70	1.23
PERCENT VARIANCE	43.1	26.1	17.8	13.0

TABLE 4

INTERCORRELATION MATRIX, MEANS, AND STANDARD DEVIATIONS: SALES DEMOGRAPHICS<sup>1,2,3</sup>

VARIABLE	MEAN	S.D.	TENURE			EDUCATION			ABILITY			TRAINING		
			1	2	3	4	5	6	7	8	9	10	11	12
(1) TENURE 76	7.03	3.26	-----	47	47	-26	-23	-28	-23	-21	-19	-13	-13	-13
(2) TENURE 77	6.73	1.69		-----	86	-34	-28	-35	-25	-22	-21	-14	-14	-14
(3) TENURE 78	7.14	1.64			-----	-39	-33	-41	-26	-22	-22	-12	-13	-12
(4) EDUCATION 76	2.40	.21				-----	91	83	34	32	27	18	18	16
(5) EDUCATION 77	2.40	.20					-----	89	32	31	27	21	19	18
(6) EDUCATION 78	2.48	.21						-----	27	24	21	11	09	08
(7) ABILITY 76	65.03	5.31							-----	98	96	27	28	28
(8) ABILITY 77	64.73	5.50								-----	98	26	27	26
(9) ABILITY 78	64.37	5.53									-----	27	28	27
(10) TRAINING 76	14.18	27.51										-----	99	97
(11) TRAINING 77	13.77	26.76											-----	99
(12) TRAINING 78	12.07	23.54												-----

<sup>1</sup> N = 142, decimal points omitted from correlation matrix

<sup>2</sup>  $r > .17$ ,  $p < .05$ ;  $r > .22$ ,  $p < .01$

<sup>3</sup> Tenure recorded in years; Education: 1 = some H.S.; 2 = H.S. degree; 3 = some college; 4 = college degree; 5 = graduate work; Ability recorded as Verbal + Quantitative test scores; and Training recorded as percentage of staff having completed "in house" training.

## PRINCIPAL COMPONENT ANALYSIS OF SALES DEMOGRAPHICS

	COMPONENTS			
	I	II	III	IV
TENURE 76	-.07	-.12	-.11	.69
TENURE 77	-.06	-.09	-.15	.91
TENURE 78	-.04	-.09	-.22	.90
EDUCATION 76	.09	.16	.92	-.19
EDUCATION 77	.11	.15	.95	-.12
EDUCATION 78	.01	.09	.92	-.22
ABILITY 76	.14	.96	.16	-.15
ABILITY 77	.13	.97	.14	-.11
ABILITY 78	.14	.97	.10	-.11
TRAINING 76	.98	.12	.08	-.06
TRAINING 77	.99	.13	.06	-.06
TRAINING 78	.98	.13	.05	-.06
EIGENVALUE	4.85	2.59	1.98	1.50
PERCENT VARIANCE	44.4	23.7	18.1	13.8



TABLE 5

INTERCORRELATION MATRIX, MEANS, AND STANDARD DEVIATIONS: CLIMATE MEANS AND DISTANCES

VARIABLE	MEAN	S.D.	MANAGERS					SALES		
			1	2	3	4	5	6	7	8
(1) MANAGER:LEADERSHIP-MEAN	3.09	.21	-----	53	-53	-30	77	41	-11	-27
(2) MANAGER:ORGANIZATION-MEAN	3.28	.16		-----	-39	-52	35	67	-14	-38
(3) MANAGER:LEADERSHIP-DISTANCE	13.74	4.08			-----	31	-35	-31	52	31
(4) MANAGER:ORGANIZATION-DISTANCE	32.22	5.13				-----	-16	-48	04	39
(5) SALES:LEADERSHIP-MEAN	3.05	.19					-----	49	-13	-19
(6) SALES:ORGANIZATION-MEAN	3.22	.13						-----	-21	-49
(7) SALES:LEADERSHIP-DISTANCE	24.50	4.86							-----	37
(8) SALES:ORGANIZATION-DISTANCE	44.80	4.20								-----

<sup>1</sup> N = 142, decimal points omitted from correlation matrix

<sup>2</sup>  $r > .17$ ,  $p < .05$ ;  $r > .22$ ,  $p < .01$

## PRINCIPAL COMPONENT ANALYSIS OF CLIMATE MEASURES

	MANAGER SAMPLE COMPONENTS		SALES SAMPLE COMPONENTS	
	I	II	I	II
LEADERSHIP:MEAN	.84	-.25	.88	.02
ORGANIZATION:MEAN	.45	-.73	.80	-.34
LEADERSHIP:DISTANCE	-.85	.14	.03	.86
ORGANIZATION:DISTANCE	-.09	.92	-.35	.74
EIGENVALUE	2.29	.80	1.97	.98
PERCENT VARIANCE	74.1	25.9	66.8	33.2

TABLE 6

LAG VERSUS LEAD CORRELATIONS AMONG CLIMATE MEASURES AND EFFECTIVENESS INDICATORS<sup>1,2,3</sup>

	SALES PER HOUR		VOLUME/COST		VOLUNTARY TURNOVER	
	76	78	76	78	76	78
MANAGER SAMPLE						
LEADERSHIP:MEAN	-.09	-.10	-.04	-.20	-.05	-.08
ORGANIZATION:MEAN	-.27	-.19	-.08	-.27	.11	.05
LEADERSHIP:DISTANCE	.14	.16	.13	.11	-.02	.00
ORGANIZATION:DISTANCE	.27	.21	.06	.09	.02	.00
SALES SAMPLE						
LEADERSHIP:MEAN	-.07	-.08	-.08	-.20	-.07	-.06
ORGANIZATION:MEAN	-.24	-.12	-.18	-.27	-.07	-.12
LEADERSHIP:DISTANCE	.04	.04	.12	.09	.07	.08
ORGANIZATION:DISTANCE	.27	.18	.17	.32	.14	.08

<sup>1</sup> N = 142<sup>2</sup>  $r \geq .17$ ,  $p < .05$ ;  $r \geq .22$ ,  $p < .01$ <sup>3</sup> Correlations connected with lines are significantly different from each other ( $p < .05$ )

TABLE 7

INTERCORRELATION MATRIX: PREDICTOR VARIABLES<sup>1,2,3</sup>

VARIABLE	ENVIRONMENT			MGR:CLIMATE				SALES:CLIMATE				MGR:DEMOGRAPHICS				SALES:DEMOGRAPHICS			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
(1) BUYING POWER	-----	-27	-03	08	-01	20	09	10	-03	33	20	18	-15	-00	15	11	-07	-02	-07
(2) UNEMPLOYMENT		-----	02	-13	-20	05	15	-19	-23	01	11	-19	02	14	-04	02	-10	-03	39
(3) LOCATION			-----	02	15	-04	-06	02	11	12	-22	-02	-00	-05	-04	-39	18	20	01
(4) MGR:LEADERSHIP-MEAN				-----	53	-53	-30	77	41	-11	-27	-10	09	-10	08	-00	-06	10	-16
(5) MGR:ORGANIZATION-MEAN					-----	-39	-52	35	67	-14	-38	08	08	-11	07	-12	-12	06	-16
(6) MGR:LEADERSHIP-DIS						-----	31	-35	-31	52	31	16	-27	02	10	-01	05	-20	-00
(7) MGR:ORGANIZATION-DIS							-----	-16	-48	04	39	-06	-03	09	-02	11	13	-10	-02
(8) SALES:LEADERSHIP-MEAN								-----	49	-13	-19	-10	05	-07	04	-00	-05	01	-20
(9) SALES:ORGANIZATION-MEAN									-----	-21	-49	01	09	-09	19	-12	-13	-10	-19
(10) SALES:LEADERSHIP-DIS										-----	37	12	-22	-06	18	-10	-01	-05	-00
(11) SALES:ORGANIZATION-DIS											-----	-05	-05	-07	-01	09	-03	-22	-10
(12) MGR:TENURE												-----	-42	-10	12	18	-07	-08	16
(13) MGR:EDUCATION													-----	13	-01	00	-04	05	-19
(14) MGR:ABILITY														-----	14	-03	-08	06	26
(15) MGR:PERFORMANCE															-----	01	-03	-24	-05
(16) SALES:TENURE																-----	-28	-22	-14
(17) SALES:EDUCATION																	-----	31	19
(18) SALES:ABILITY																		-----	27
(19) SALES:TRAINING																			-----

<sup>1</sup> N = 142, decimal points omitted from correlation matrix.<sup>2</sup>  $r > .17$ ,  $p < .05$ ;  $r > .22$ ,  $p < .01$ <sup>3</sup> Mall location = 1; Downtown/Neighborhood location = 0

TABLE 8

CORRELATIONS AMONG PREDICTOR VARIABLES AND EFFECTIVENESS INDICATORS<sup>1,2</sup>

PREDICTOR VARIABLES	EFFECTIVENESS INDICATORS					
	SPH	V/C	MGR. TURNOVER	SALES TURNOVER	MGR. SAT.	SALES SAT.
ENVIRONMENT						
BUYING POWER	15	26	-02	-02	-07	-15
UNEMPLOYMENT	-16	-04	25	-01	-21	-27
LOCATION	03	07	-03	08	13	08
MANAGER CLIMATE						
LEADERSHIP:MEAN	01	-13	-23	-09	61	45
ORGANIZATION:MEAN	-18	-24	-17	03	91	62
LEADERSHIP:DISTANCE	-00	09	03	02	-43	-39
ORGANIZATION:DISTANCE	21	31	21	-07	-54	-43
SALES CLIMATE						
LEADERSHIP:MEAN	02	-09	-19	-14	42	56
ORGANIZATION:MEAN	-18	-17	-09	-07	67	90
LEADERSHIP:DISTANCE	14	11	-05	09	-12	-30
ORGANIZATION:DISTANCE	23	10	19	11	-41	-49
MANAGER DEMOGRAPHICS						
TENURE	05	04	-07	-04	07	03
EDUCATION	-03	-15	-08	-02	09	09
ABILITY	-30	-03	09	01	-16	-12
PERFORMANCE	-00	-05	-07	-15	10	12
SALES DEMOGRAPHICS						
TENURE	23	-15	-09	-33	-05	-03
EDUCATION	06	14	04	14	-18	-18
ABILITY	20	22	-16	15	04	-07
TRAINING	-07	11	16	19	-20	-21

<sup>1</sup> N = 142, decimal points omitted.<sup>2</sup>  $r > .17$ ,  $p < .05$ ;  $r > .22$ ,  $p < .01$

TABLE 9

REGRESSION RESULTS: EFFECTIVENESS INDICATORS  
AS A FUNCTION OF THE ENVIRONMENT, CLIMATE, AND DEMOGRAPHICS

## MANAGER SAMPLE:

REGRESSION MODEL:	EFFECTIVENESS INDICATORS			
	SPH	V/C	MGR. TURNOVER	MGR. SAT
	R-square	R-square	R-square	R-square
ENVIRONMENT (E)	.04	.07 <sup>*</sup>	.07 <sup>*</sup>	.08 <sup>*</sup>
MANAGER CLIMATE (MC)	.07 <sup>*</sup>	.10 <sup>*</sup>	.10 <sup>*</sup>	.85 <sup>*</sup>
MANAGER DEMOGRAPHICS (MD)	.09 <sup>*</sup>	.03	.03	.06
E + MC	.13 <sup>*</sup>	.18 <sup>*</sup>	.14 <sup>*</sup>	.86 <sup>*</sup>
E + MD	.12 <sup>*</sup>	.09	.09	.12 <sup>*</sup>
MC + MD	.18 <sup>*</sup>	.13 <sup>*</sup>	.12 <sup>*</sup>	.86 <sup>*</sup>
E + MC + MD	.22 <sup>*</sup>	.20 <sup>*</sup>	.16 <sup>*</sup>	.86 <sup>*</sup>

## UNIQUE VARIANCE:

ENVIRONMENT	.04	.07	.04	.00
MANAGER CLIMATE	.10	.11	.07	.74
MANAGER DEMOGRAPHICS	.09	.02	.02	.00

## SALES SAMPLE:

REGRESSION MODEL:	EFFECTIVENESS INDICATORS			
	SPH	V/C	SALES TURNOVER	SALES SAT.
	R-square	R-square	R-square	R-square
ENVIRONMENT (E)	.04	.07 <sup>*</sup>	.01	.13 <sup>*</sup>
SALES CLIMATE (SC)	.08 <sup>*</sup>	.11 <sup>*</sup>	.03	.84 <sup>*</sup>
SALES DEMOGRAPHICS (SD)	.13 <sup>*</sup>	.06	.13 <sup>*</sup>	.07 <sup>*</sup>
E + SC	.12 <sup>*</sup>	.10 <sup>*</sup>	.04	.86 <sup>*</sup>
E + SD	.16 <sup>*</sup>	.14 <sup>*</sup>	.14 <sup>*</sup>	.19 <sup>*</sup>
SC + SD	.21 <sup>*</sup>	.10	.17 <sup>*</sup>	.84 <sup>*</sup>
E + SC + SD	.26 <sup>*</sup>	.17 <sup>*</sup>	.18 <sup>*</sup>	.87 <sup>*</sup>

## UNIQUE VARIANCE:

ENVIRONMENT	.05	.07	.01	.03
SALES CLIMATE	.10	.03	.04	.68
SALES DEMOGRAPHICS	.14	.07	.14	.01

<sup>\*</sup> R<sup>2</sup> for model significant at p < .05.

TABLE 10

## CANONICAL CORRELATION ANALYSIS: EFFECTIVENESS INDICATORS AS A FUNCTION OF THE ENVIRONMENT

## MANAGER SAMPLE:

	PREDICTOR VARIATE			CRITERION VARIATE	
	I	CORRE- WEIGHTS LATIONS		I	CORRE- WEIGHTS LATIONS
BUYING POWER	.13	.36	SALES PER HOUR	.42	.47
UNEMPLOYMENT	-.88	-.91	VOLUME/COST	.42	.26
LOCATION	.40	.38	MANAGER TURNOVER	-.46	-.63
			MANAGER SATISFACTION	.67	.61

CANONICAL CORRELATION = .37, WILKS LAMBDA = .79,  $p < .01$ , REDUNDANCY INDEX = 3.65%

## SALES SAMPLE:

	PREDICTOR VARIATES					CRITERION VARIATES			
	I	CORRE- WEIGHTS LATIONS	II	CORRE- WEIGHTS LATIONS		I	CORRE- WEIGHTS LATIONS	II	CORRE- WEIGHTS LATIONS
BUYING POWER	-.56	-.31	-.87	-.93	SALES PER HOUR	.29	.21	-.50	-.62
UNEMPLOYMENT	-.96	-.80	.25	.48	VOLUME/COST	-.07	-.23	-.81	-.87
LOCATION	.25	.25	-.29	-.26	SALES TURNOVER	.17	.12	.02	-.03
					SALES SATISFACTION	.96	.95	-.10	.13

1st CANONICAL CORRELATION = .38, WILKS LAMBDA = .78,  $p < .01$ , REDUNDANCY INDEX = 3.61%2nd CANONICAL CORRELATION = .29, WILKS LAMBDA = .91,  $p < .05$ , REDUNDANCY INDEX = 2.50%

TABLE 11

## CANONICAL CORRELATION ANALYSIS: EFFECTIVENESS INDICATORS AS A FUNCTION OF CLIMATE

## MANAGER SAMPLE:

PREDICTOR VARIATES					CRITERION VARIATES				
I		II			I		II		
	WEIGHTS	CORRE- LATIONS	WEIGHTS	CORRE- LATIONS		WEIGHTS	CORRE- LATIONS	WEIGHTS	CORRE- LATIONS
LEADERSHIP:MEAN	.18	.65	.23	-.04	SALES PER HOUR	-.09	-.18	-.46	-.43
ORGANIZATION:MEAN	.84	.98	-.55	-.07	VOLUME/COST	.03	-.27	-.63	-.63
LEADERSHIP:DISTANCE	-.00	-.45	.58	.33	MANAGER TURNOVER	-.02	-.22	-.68	-.58
ORGANIZATION:DISTANCE	-.10	-.59	-1.10	-.71	MANAGER SATISFACTION	.99	.99	-.41	-.03

1st CANONICAL CORRELATION = .93, WILKS LAMBDA = .12,  $p < .01$ , REDUNDANCY INDEX = 24.60%2nd CANONICAL CORRELATION = .30, WILKS LAMBDA = .87,  $\underline{p}$ , .05, REDUNDANCY INDEX = 2.04%

## SALES SAMPLE:

PREDICTOR VARIATE			CRITERION VARIATE	
	I		I	
	WEIGHTS	CORRE- LATIONS	WEIGHTS	CORRE- LATIONS
LEADERSHIP:MEAN	.17	.61	SALES PER HOUR	-.14
ORGANIZATION:MEAN	.83	.98	VOLUME/COST	.07
LEADERSHIP:DISTANCE	-.11	-.34	SALES TURNOVER	-.08
ORGANIZATION:DISTANCE	-.08	-.56	SALES SATISFACTION	.99

CANONICAL CORRELATION = .93, WILKS LAMBDA = .13,  $p < .01$ , REDUNDANCY INDEX = 22.75%

TABLE 12

## CANONICAL CORRELATION ANALYSIS: EFFECTIVENESS INDICATORS AS A FUNCTION OF DEMOGRAPHICS

## MANAGER SAMPLE:

	PREDICTOR VARIATE		CRITERION VARIATE	
	I		I	
	WEIGHTS	CORRELATIONS	WEIGHTS	CORRELATIONS
TENURE	.25	.23	SALES PER HOUR	.77 .73
EDUCATION	.36	.13	VOLUME/COST	.01 -.07
ABILITY	-.95	-.88	MANAGER TURNOVER	-.17 -.40
PERFORMANCE	.30	.19	MANAGER SATISFACTION	.63 .59

CANONICAL CORRELATION = .39, WILKS LAMBDA = .81,  $p < .05$ , REDUNDANCY INDEX = 4.07%

## SALES SAMPLE:

	PREDICTOR VARIATES				CRITERION VARIATES			
	I		II		I		II	
	WEIGHTS	CORRELATIONS	WEIGHTS	CORRELATIONS	WEIGHTS	CORRELATIONS	WEIGHTS	CORRELATIONS
TENURE	.92	.92	-.31	.00	SALES PER HOUR	.62 .59	-.62	-.70
EDUCATION	.04	-.24	-.45	-.63	VOLUME/COST	-.33	-.30	-.37
ABILITY	.17	-.12	-.73	-.86	SALES TURNOVER	-.71	-.76	-.30
TRAINING	-.39	-.46	-.21	-.45	SALES SATISFACTION	.01	.07	.43

1st CANONICAL CORRELATION = .46, WILKS LAMBDA = .66,  $p < .01$ , REDUNDANCY INDEX = 5.37%

2nd CANONICAL CORRELATION = .33, WILKS LAMBDA = .84,  $p < .01$ , REDUNDANCY INDEX = 3.41%



TABLE 13

CANONICAL CORRELATION ANALYSIS: EFFECTIVENESS INDICATORS AS A FUNCTION OF THE ENVIRONMENT, CLIMATE, AND  
DEMOGRAPHICS--MANAGER SAMPLE

MANAGER SAMPLE:

PREDICTOR VARIATES					CRITERION VARIATES				
	I		II			I		II	
	WEIGHTS	CORRE- LATIONS	WEIGHTS	CORRE- LATIONS		WEIGHTS	CORRE- LATIONS	WEIGHTS	CORRE- LATIONS
BUYING POWER	-.11	-.09	-.40	-.48	SALES PER HOUR	-.09	-.18	-.79	-.84
UNEMPLOYMENT	-.03	-.21	.27	.42	VOLUME/COST	.00	-.29	-.55	-.58
LOCATION	-.00	.13	-.22	-.20	MANAGER TURNOVER	-.03	-.24	-.02	.11
LEADERSHIP:MEAN	.20	.65	-.11	-.24	MANAGER SATISFACTION	.98	.99	-.31	-.07
ORGANIZATION:MEAN	.81	.98	.07	-.01					
LEADERSHIP:DISTANCE	.02	-.45	.38	.16					
ORGANIZATION:DISTANCE	-.09	-.59	-.53	-.34					
TENURE	.03	.07	-.05	-.16					
EDUCATION	.02	.10	.08	.15					
ABILITY	-.02	-.14	.59	.61					
PERFORMANCE	.04	.11	-.07	-.01					

1st CANONICAL CORRELATION = .93, WILKS LAMBDA = .08,  $p < .01$ , REDUNDANCY INDEX = 25.30%2nd CANONICAL CORRELATION = .50, WILKS LAMBDA = .33,  $p < .01$ , REDUNDANCY INDEX = 6.58%

TABLE 14

CANONICAL CORRELATION ANALYSIS: EFFECTIVENESS INDICATORS AS A FUNCTION OF THE ENVIRONMENT, CLIMATE, AND DEMOGRAPHICS--SALES SAMPLE

SALES SAMPLE:

	PREDICTOR VARIATES						CRITERION VARIATES						
	I		II		III		I		II		III		
	WEIGHTS	CORRE- LATIONS	WEIGHTS	CORRE- LATIONS	WEIGHTS	CORRE- LATIONS	WEIGHTS	CORRE- LATIONS	WEIGHTS	CORRE- LATIONS	WEIGHTS	CORRE- LATIONS	
BUYING POWER	-.17	-.17	-.12	.18	.19	.34	SALES PER HOUR	-.12	-.18	.89	.88	.39	.43
UNEMPLOYMENT	-.10	-.26	-.29	-.30	-.43	-.39	VOLUME/COST	.02	-.24	-.17	-.09	.58	.62
LOCATION	.01	.07	.32	-.02	.15	.28	SALES: TURNOVER	-.10	-.13	-.42	-.47	.65	.68
LEADERSHIP: MEAN	.19	.60	.27	.25	-.06	.08	SALES: SATISFACTION	.98	.99	.07	.06	.30	.11
ORGANIZATION: MEAN	.79	.96	-.01	-.09	.42	.12							
LEADERSHIP: DIS	-.06	-.33	.12	.10	-.02	.19							
ORGANIZATION: DIS	-.08	-.55	.32	.21	.60	.17							
TENURE	.06	-.03	.93	.74	-.28	-.50							
EDUCATION	-.10	-.21	.01	-.09	-.00	.31							
ABILITY	-.02	-.12	.38	.14	.60	.61							
TRAINING	.01	-.23	-.13	-.35	.32	.22							

1st CANONICAL CORRELATION = .94, WILKS LAMBDA = .06,  $p < .01$ , REDUNDANCY INDEX = 24.08%2nd CANONICAL CORRELATION = .49, WILKS LAMBDA = .57,  $p < .01$ , REDUNDANCY INDEX = 6.14%3rd CANONICAL CORRELATION = .45, WILKS LAMBDA = .75,  $p < .01$ , REDUNDANCY INDEX = 5.29%

TABLE 15

REDUNDANCY AMONG PREDICTOR AND CRITERION SETS BASED ON HIERARCHICAL CANONICAL CORRELATION

MODEL:	REDUNDANCY INDEX	
	MANAGER SAMPLE	SALES SAMPLE
ENVIRONMENT (E)	3.65%	6.11%
CLIMATE (C)	26.64%	22.75%
DEMOGRAPHICS (D)	4.07%	8.78%
E + C	29.63%	23.45%
E + D	6.23%	15.67%
C + D	29.25%	32.92%
E + C + D	31.88%	35.51%

## UNIQUE VARIANCE:

ENVIRONMENT	2.63%	2.59%
CLIMATE	25.65%	19.84%
DEMOGRAPHICS	2.25%	12.06%

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Human Resource Management Center  
Pearl Harbor, HI 96860

Commander in Chief  
Human Resource Management Division  
U.S. Pacific Fleet  
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Officer in Charge  
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Commanding Officer  
Human Resource Management School  
Naval Air Station Memphis  
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LIST 8  
NAVY MISCELLANEOUS

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HRM Department (NMPC-6)  
Washington, DC 20350

(2 copies) Douglas B. Blackburn, Director  
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